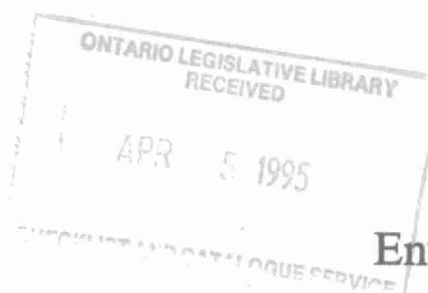


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Proposed Guideline for the Clean-Up of Contaminated Sites in Ontario



Recommendations
to the Minister
of the
Environment and Energy

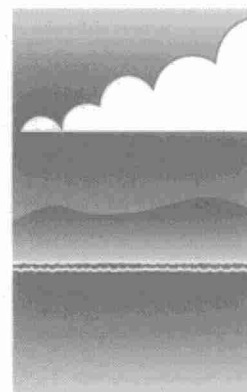
Prepared by ACES

ACES



Advisory
Committee
on Environmental
Standards

Comité
consultatif
sur les normes
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Proposed Guideline for the Clean-Up of Contaminated Sites in Ontario

**Recommendations
to the Minister
of the
Environment and Energy**

Prepared by ACES

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Public Consultation Summary Tables (Appendix 3) available upon request. Call ACES Office at (416) 314-9265

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Executive Summary

On May 11, 1994, the Honourable C.J. (Bud) Wildman, Minister of the Environment and Energy, requested that the Advisory Committee on Environmental Standards (ACES) undertake a review, consult with the public and provide recommendations on the Ministry of the Environment and Energy's (MOEE) Proposed Guideline for the Clean-up of Contaminated Sites in Ontario (MOEE, 1994) and on the documents supporting it.

ACES initiated a 90 day public consultation using its large mailing list and by advertising in selected newspapers across the Province of Ontario. The public response was unprecedented and exceeded that for any other public consultation conducted by ACES to date. The volume and diversity of the public response indicated that the issue of clean-up of contaminated sites is one of very significant concern in Ontario.

The Proposed Guideline provides generic clean-up criteria and expands the number of contaminants considered to 117 from the 22 in the existing Guidelines. It also introduces a number of additional clean-up options, such as clean-up to background levels, stratified depth clean-up, potable/non potable groundwater distinctions, and Site Specific Risk Assessment (SSRA) with risk management. The Guideline proposed a repositioned role for the MOEE and enhanced responsibilities for municipalities and proponents. A new certification and notification procedure is proposed, with Professional Engineer signing-off on clean-ups and registration on title of clean-ups that are not done to the full-depth potable generic criteria.

Overall, there was wide-spread, although not universal, support from the public for the Proposed Guidelines, which appear to offer greater transparency for the process and greater flexibility to proponents wishing to undertake a voluntary clean-up. ACES, therefore, recommends adoption of the proposed framework, with the exceptions of, 1) restricting the sign-off to Professional Engineers, and 2) the registration on title provisions. Reasons for these alterations to the Proposed Guidelines are discussed in detail in the report.

Assurance of both the process and the results are of critical importance to proponents, developers, financial institutions, municipal authorities and the public. ACES has identified areas where a continued strong involvement of the MOEE in clean-ups is essential for providing this needed assurance. These areas include revising and interpreting the Guideline, establishing and maintaining a public registry for mandatory and voluntarily submitted documentation associated with site clean-ups (in lieu of registration on title as proposed in the Guideline); supporting municipalities in performing their responsibilities under the Guidelines; identifying and designating areas of the province considered to have nonpotable groundwater; and overseeing application of the guideline in fields where professional judgement is exercised, such as SSRA. In areas of application of the Guideline where the MOEE will not be directly involved, ACES recommends assurance be provided through the use of accredited professionals, both for the Phase I Environmental Site Assessment, the critical first step in the clean-up process, and in the last step, the sign-off on the Notice of Clean-up. ACES

recommends that the sign-off not be restricted to Professional Engineers. ACES further recommends that the MOEE facilitate the formation of an inclusive certifying body for these practitioners.

Another common theme of the public comment was the need for greater clarity. There are several aspects of the Guideline which could be made clearer; the role, methods and goals of public consultation, the sampling and analysis methodology, the definition of sensitive sites, the application of the stratified depth approach and the application of the land use designations.

In addition, ACES recommends that the linkages and inconsistencies with other policies such as the MOEE's proposed Materials Management Policy and the planned lender liability policy, and with other agencies' regulations, such as the *Planning Act* and the *Gasoline Handling Act* be resolved and clarified within the Guideline.

The Site Specific Risk Assessment approach received high, although not universal, support as a cost-effective clean-up option. ACES recommends that this approach be retained as part of the Guideline, provided that the level of acceptable risk used in SSRAs be the same as that used to derive the generic criteria for each contaminant, and that the MOEE review and approve SSRA plans and oversee the peer review process. Also, ACES recommends that a "class" Site Specific Risk Assessment approach be introduced to allow clean-up of smaller sites sharing similar features.

Two areas of the proposal of concern to ACES which received less public comment and critical review than many others were the specific generic criteria and the socio-economic analysis. ACES recommends that these areas of concern receive continued review by the Ministry.

The Minister specifically requested that ACES study that applicability of the Guideline to small communities. Public comments received indicated concerns about the abilities of smaller municipalities to deal with complex clean-up proposals. ACES recommends the MOEE continue to provide technical support to municipalities.

In conclusion, ACES recommends that the *Proposed Guidelines for the Clean-up of Contaminated Sites in Ontario* be implemented with the recommended modifications, as described above, that are designed to provide greater assurance and clarity.

ACES wishes to acknowledge the significant support and cooperation provided by MOEE staff during this consultation.

(Please refer to Summary of Recommendations section on page 55.)

Referral

On May 11, 1994, the Honourable C.J. (Bud) Wildman, Minister of the Environment and Energy, requested that the Advisory Committee on Environmental Standards (ACES) undertake a review, consult with the public and provide recommendations within 150 days on the Ministry of the Environment and Energy's (MOEE) *Proposed Guideline for the Clean-up of Contaminated Sites in Ontario* (MOEE 1994) (hereafter referred to as the Guideline), and supporting documents. ACES received the final copies of all the documentation in late June, 1994.

Public Consultation Process

Due to tight time constraints, ACES was asked by the Minister to undertake an internal review concurrent with the public consultation. This was a departure from the usual ACES model of providing a preliminary review of MOEE documents to determine their suitability for distribution to the public. In order to solicit public comment, direct mailing as well as broad advertising campaigns were launched on July 11, 1994. In addition to ACES's general mailing list, which contained about 3,300 names of individuals and groups from previous ACES consultations, a targeted mailing list was compiled which included approximately 200 individuals and organizations specifically interested in site clean-up issues. A package of material (Appendix 1) announcing the consultation along with background material on site assessment and clean-up was sent to the general and targeted mailing lists during the week of July 11-15, 1994. In the fourth week of the consultation, a follow-up letter was sent to those individuals and groups on the targeted mailing list who had not responded to the first mail out, as a reminder of the consultation and to encourage their participation.

Coupled with these direct mailings, advertisements appeared in newspapers throughout the province during the week of July 18, 1994. An advertisement also appeared in the Ontario Gazette on July 9, 1994 and on the Web Network on July 8, 1994. (The Web Network is an electronic communications network to which many different organizations, including many environmental groups from around the world, subscribe.)

A list of consultation questions was included in the consultation package (see Appendix 1) in order to help focus the discussion. Additional comments were also encouraged.

The following documents, produced by the MOEE, were distributed to the public upon request: *Proposed Guideline for the Clean-up of Contaminated Sites in Ontario, Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Clean-up of Contaminated Sites. Part 1: Discussion; Guidance on Sampling and Analytical Methods for Site Clean-ups in Ontario; Guidance on the Use of Risk Assessments in Site Clean-ups in Ontario.* The MOEE's *Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Clean-up of Contaminated Sites. Part 2: Appendices and the Economic Assessment of Case Studies Based on the Proposed Ministry Clean-up*

Guidelines were provided for review at the ACES office and at MOEE Regional and District Offices.

Two identical public information sessions were held on August 11, 1994 and August 16, 1994 in Hamilton and Toronto respectively. These sessions were held in order to explain ACES's public consultation process and to allow the MOEE to provide the rationale for the development of the Guideline and supporting documents. An announcement of these meetings was included in the mail out packages. A summary of the presentations was provided in poster form at the meetings and the meetings were tape recorded. Written transcripts were made available upon request. Approximately 300 copies of the transcripts were distributed to the public.

Requests for oral deputations were received until August 15, 1994. In total, four deputation sessions were held. These were scheduled as follows:

August 31, 1994 in Toronto;

September 13, 1994 in Guelph;

September 21, 1994 in Toronto;

September 29, 1994 via teleconference to accommodate commenters from other areas of the Province.

A total of 30 oral presentations were made to ACES. All deputations were audio taped for the use of ACES members. All presenters were encouraged to submit their comments in writing prior to the end of the consultation period.

The deadline for written comments was October 11, 1994. Comments received after the deadline were considered but their inclusion in ACES report to the Minister of Environment and Energy was not guaranteed. Written comments, which were edited in compliance with the *Freedom of Information and Protection of Privacy Act*, were available for viewing by the public at the ACES office. Copies of the submissions were also available.

This was by far the largest consultation ever undertaken by ACES. A total of about 1,700 requests for the Guideline document were received in response to the initial mail out and advertisements. A total of 204 submissions were received, including deputations. A list of respondents appears in Appendix 2 and summaries of public comments received appear in Appendix 3.

ACES had six weeks to review all the submissions, analyze key issues, develop recommendations and prepare the report for the Minister.

Overview of the Proposed Guideline

The Proposed Guideline is intended to replace the 1989 MOEE *Guidelines for the Decommissioning and Clean-up of Sites in Ontario* and the 1993 MOEE *Interim Guidelines for*

the Assessment and Management of Petroleum Contaminated Sites in Ontario. The Proposed Guideline provides guidance to property owners/consultants on how to: assess a site for possible contamination; collect and analyze samples if contamination is found; clean-up the property for re-use or development. In most cases, the application of the Guideline will be at the discretion of the property owner.

The Guideline incorporates three different approaches for remediating a contaminated site: background; generic; and Site Specific Risk Assessment. The background approach remediates the soil to rural or urban background levels for the contaminants of concern.

The generic approach includes criteria for 117 contaminants for both soil and groundwater, allows the choice of a stratified depth clean-up, the choice of land use designation and two groundwater protection categories (potable or nonpotable). Site Specific Risk Assessment and risk management are alternatives to the use of the background or generic clean-up criteria.

The Guideline repositions the Ministry with respect to assurance: the MOEE will no longer review and approve clean-up plans. Instead, it is proposed that a Notice of Clean-up be submitted upon the completion of any clean-up. This Notice is to be certified by a Professional Engineer and acknowledged by the Ministry. The Ministry is also proposing that any clean-up other than a background or generic utilizing full depth/potable groundwater criteria be registered on the property title.

ACES's Review: Some Considerations

Prior to presenting details of the public review of the MOEE proposals, it would be useful to set out some of the results of ACES's concurrent internal review in order to place the issues in context.

This Guideline has been developed to be implemented under the existing legal framework of the *Environmental Protection Act*. The use of legal instruments currently available under the existing legal framework when applied to the Guideline, such as the Certificate of Prohibition, is a less than ideal situation. ACES is aware of the time required to develop new regulations and the need to develop practical approaches quickly. It must be noted that regulatory change has not been proposed by the Ministry and was not part of the present consultation. From the standpoint of ACES's comment on the present consultation, it is an alternative which has potential relevance for the future only. Accordingly, there are issues which will remain unresolved within the Proposed Guideline structure.

ACES was guided in its review by the following principles: the need to ensure the protection of groundwater resources, the protection of human and ecological health and the public's right to be informed about environmental policy.

Another underlying principle common to ACES's consideration of the issues arising from the Proposed Guideline was the need to encourage remediation of soils on-site instead of the removal and landfilling of contaminated soils. ACES acknowledges the MOEE's support of this principle in the Proposed Guideline with the proposal to exempt on-site treatment of contaminated soil for re-use on-site from Part V (Section 27) Waste Processing Site approval. ACES endorses this proposal and would encourage the Ministry to further examine means to promote alternate clean-up strategies other than offsite disposal of contaminated soil, also known as "dig and dump".

The Ministry's proposed Materials Management Policy (MMP) is intended to control the disposal of contaminated soils and, in its absence, it is not clear how the MOEE will prevent the spread of contaminated materials to clean sites (see the Legal Framework section below and Section 4.2 Linkages with Materials Management Policy and other Regulations/Policies Section for further discussion of this issue).

In addition, ACES believes that the MOEE has a leadership role to play in the dissemination of information regarding remediation technologies and their application. The Ministry currently has a publication entitled *Remediation Technologies for Contaminated Soils* (MOEE, 1992) which provides information of various clean-up techniques. ACES would encourage the expansion and revision of that publication on a regular basis to provide proponents with up to date information.

Due to the tight time constraints and concurrent internal review, ACES focussed on the major issues which arose from the consultation. There are some important related issues that have not received as in-depth an examination by ACES. For instance, ACES was not able to fully consider the specific comments received on the criteria levels proposed. These issues have been highlighted and referred to the MOEE for further consideration. They are noted in the discussion and recommendations sections of the appropriate issues found in this report. In principle, ACES endorses the direction of many of the revisions to the existing Guideline such as the flexibility provided in the clean-up approaches, the expanded number of generic criteria provided, the effects-based approach in arriving at those criteria and the inclusion of a Site Specific Risk Assessment option to clean-up.

A thorough economic analysis was not provided to ACES for review. The Committee was provided with a hypothetical cost comparison for various clean-up scenarios by the MOEE which was challenged and supported by submissions from the public. In the absence of a comprehensive economic analysis, ACES is uncertain about the true economic impacts that the Proposed Guideline may have.

ACES is sympathetic to the desire for a full socio-economic analysis of the Guideline. We believe, however, that the public would not be served by delaying the implementation of this Guideline while such an assessment is undertaken. We believe that the Guideline should be implemented as soon as the Ministry has been able to make the recommended revisions. We

further believe that the Ministry should monitor carefully the socioeconomic impacts of this Guideline in the coming years with an eye to making adjustments and revisions when necessary (for further discussion of these issues please refer to Section 1.7 Economic Concerns and Section 4.1 Revising and Updating Policies and Criteria).

There were several assumptions ACES used in the context of its review of the Proposed Guideline. Assumptions have been made concerning the legal framework for the use of the Guideline, liability issues associated with its use, and the "triggers" for its application. These assumptions will be outlined in more detail below.

1. Legal Framework:

The MOEE is mandated to enforce the following legislation, and regulations pursuant to this legislation:

- the *Environmental Protection Act* (R.S.O. 1990) (EPA)
- the *Ontario Water Resources Act* (R.S.O. 1990) (OWRA)
- the *Pesticides Act* (R.S.O. 1990) (PA)
- the *Environmental Assessment Act* (R.S.O. 1990) (EAA).

The MOEE's responsibilities to enforce legislation under its mandate remain unchanged by the Proposed Guideline. Therefore, the MOEE, through legislative authority, can require that a property owner use this Guideline for site clean-up if there is or there is likely to be an adverse effect as defined in the EPA. Under this authority, the MOEE can issue an Order that a site be restored in a manner consistent with the Guideline. It is ACES's understanding that the MOEE will continue to oversee the clean-up of sites, in the cases where an Order is issued.

There are several other policies and regulations with which the Proposed Guideline is linked. However, the Guideline does not make these linkages clear. For example, the Ministry's proposed Materials Management Policy is not referenced or discussed in the Guideline although the two policies are inter-related and currently inconsistent in a number of important areas (e.g., the definition of soils at depth, sampling protocols, etc). Implications of the Guideline on the *Gasoline Handling Act* and the *Planning Act*, administered by the Ministry of Consumer and Corporate Relations and the Ministry of Municipal Affairs respectively, also have not been explored in the Ministry's document (refer to Sections 4.2 Linkages with Materials Management Policy and Other Regulations/Policies for further discussion).

2. Liability:

The legal liability concerns (i.e., who must pay the costs for clean-ups) are a driving force for site remediation in the province. ACES has heard during this consultation that legal liability uncertainties are adversely affecting the clean-up and re-use of contaminated properties. We have, however, decided that the issue of liability is beyond the scope of the review and consultation on the Proposed Guideline. We also understand that liability issues, as they

pertain to contaminated sites, are being addressed in other parallel processes (e.g., the MOEE's Working Group on lender liability).

However, ACES believes that its recommendations regarding assurance, clarity and implementation of the Guideline may help to crystallize areas of concern regarding potential liability.

3. Triggers:

There are three broad triggers for likely application of the Guideline:

- i) by the MOEE through the issuance of an Order to clean-up due to an adverse effect or potential adverse effect;
- ii) by a municipality in the context of approval of land uses;
- iii) by a person or institution who has or wishes to acquire an interest in the property, including a lender.

While the 2nd and 3rd categories may be considered "voluntary" in the sense that an owner need not apply for land use approval and may acquire an interest in property without regard for its state, ACES believes that these will represent the greatest impetus for the use of the Guideline.

This Guideline does not change the MOEE's programs with respect to the investigation of adverse effects or the role of municipalities under the *Planning Act*. The Guideline is designed to be a tool that can be used by those who are involved in site assessment and clean-up to determine whether clean-up is required, and if so, to what level.

Review of Public Comment

I. Overview:

In reviewing the written submissions and comments presented at the deputation meetings, every response was considered carefully. All the comments, whether written or oral, were equally considered during ACES's deliberations. ACES was very impressed with the overall quality of the submissions, given the complexity of the issues surrounding the Guideline and the number of standards that were proposed.

Several themes emerged regularly throughout the review of the public submissions. These themes were as follows:

- 1. General Support for the Guideline;
- 2. Need for Assurance;
- 3. Need for Clarity.

These themes will be described in more detail below.

1. General Support for the Guideline:

The majority of submissions received were supportive of the principles and approach of the Proposed Guideline. However, there were some aspects of the Guideline which were more controversial. For example, the role of the Ministry and the certification of the Notice of Clean-up by Professional Engineers.

Respondents generally endorsed the flexibility and comprehensiveness of the Proposed Guideline and felt it represents a significant improvement over the existing Guidelines. Cited repeatedly as improvements to the existing Guidelines was the expanded list of contaminant criteria, the flexibility in dealing with contaminants at depth and the addition of the Site Specific Risk Assessment option. Respondents noted that these provisions provided property owners with the flexibility to determine the best approach to cleaning up contaminated sites.

2. Need for Assurance:

There was an often expressed desire by respondents for greater assurance to be provided by the MOEE. Simply acknowledging the receipt of the Notice of Clean-up was not generally regarded as sufficient to secure the confidence of lenders, potential owners and the public that the clean-up was completed to the satisfaction of the MOEE (i.e., in accordance with the Proposed Guideline). Such assurance was viewed as crucial to further development.

ACES is sympathetic to the need for assurance about the quality of the clean-up. Without, however, changing the regulatory framework, we do not believe that the Ministry can or should provide the degree of assurance that some are seeking. We do believe however, that the Ministry can provide greater assurance than is currently proposed by providing more prescriptive advice on issues such as public consultation, by requiring where possible that assessments and clean-up activities be conducted by certified professionals, and by the Ministry retaining the review and approval functions for those areas where a large degree of professional judgement is required (e.g., SSRAs). We do suggest that the Ministry monitor its role closely with a willingness to consider regulatory change should the lack of assurance prove to be an impediment to the redevelopment and reuse of contaminated properties.

3. Need for Clarity:

Many respondents to the consultation described a need for greater clarity in the Guideline in the areas outlined under particular clean-up options and in the organization of the Guideline document itself. For example, the need for greater guidance as to the extent and role of public consultation was cited repeatedly.

ACES believes that one of the strengths of the Proposed Guideline is the flexibility it provides owners and their consultants in determining the appropriate clean-up strategy. It is understood that flexibility requires the use of guiding principles rather than detailed prescriptive requirements. However, in order for this flexibility to be maintained and a degree of certainty to be provided to proponents that the intent of the Guideline is being followed, ACES believes that greater clarity must be provided throughout the document.

This becomes particularly important when considering that the Guideline proposes a reduced role for the Ministry in reviewing and approving clean-up plans. The need to provide greater clarity while at the same time maintaining flexibility formed the basis for many of the recommendations that follow.

II. Issues Identified:

Issues were categorized and are discussed in the report as follows:

- 1. Policy Framework**
 - 1.1 Role of the MOEE
 - 1.2 Notice of Clean-up
 - 1.3 Certification
 - 1.4 Title Registration
 - 1.5 Public Consultation
 - 1.6 Municipalities
 - 1.7 Economic Concerns
- 2. Clean-Up Steps and Options**
 - 2.1 Phase 1 Environmental Site Assessment
 - 2.2 Sampling and Analysis
 - 2.3 Sensitive Sites
 - 2.4 Clean-up Approaches
 - 2.5 Rationale for the Generic Criteria and Concerns Regarding Specific Levels
 - 2.5.1 Land Use Designations
 - 2.5.2 Potable/Nonpotable Groundwater
 - 2.5.3 Stratified Depth Clean-up
 - 2.6 Site Specific Risk Assessment and Risk Management
- 3. Other Issues**
- 4. Implementation**
 - 4.1 Revising and Updating Policies and Criteria
 - 4.2 Linkages with Materials Management Policy and Other Regulations/Policies

1. Policy Framework

1.1 Role of the MOEE

ACES's Understanding of the Proposal Under the Guideline

Aspects of the Ministry's Current Role

As noted above, at present the Ministry has the legislative and regulatory authority to require owners of property to clean-up if the property causes or is likely to cause an adverse effect, as defined by the *Environmental Protection Act* (EPA), or to clean-up in the case of a spill. This authority is exercised through a Director's Order under the EPA. The current Guidelines are enforceable in a situation where a Director's Order is issued and the terms and conditions of the Order require clean-up in accordance with the Guideline. The Proposed Guideline suggests no change to this authority.

While the existing Guidelines have been used by the Ministry in specifying required performance for the clean-up Orders, the Guidelines' predominant application has been in its "voluntary" use by municipal authorities, land purchasers, lenders, land owners and the public. Municipalities have used the existing Guidelines to ensure that soil quality is consistent with proposed land use changes. Land purchasers and lenders have employed the Guidelines to check against and avoid future liability for soil clean-up: to avert the possibility of a Director's Order requiring clean-up under the adverse effect provisions of the EPA. Land owners and the public have referred to the existing Guidelines to gauge soil cleanliness. The Proposed Guideline does not represent a change in these applications.

The Ministry's role in the clean-up process can be divided into three interrelated aspects:

- i) *Guideline Setting and Modification.* The Ministry has established the Guideline and made modifications to it over time.
- ii) *Guideline Interpretation.* The Ministry has played an important part in interpreting the Guideline to those undertaking the clean-up. It has interpreted general provisions of the Guideline which apply to all sites and indicated how the Guideline should be applied to individual sites.
- iii) *Guideline Assurance and Enforcement.* The Ministry's role as Guideline setter and its active involvement in Guideline interpretation, especially for individual clean-ups, has provided clean-up proponents with a perceived level of assurance -- assurance that the clean-up proceeded according to the Ministry's interpretation of what was appropriate, and thereby implicit assurance against the likelihood of a future Director's Order ordering clean-up under the adverse effect provisions of the *Environmental Protection Act*.

Proposed Change to the Ministry Role

The Proposed Guideline suggests no change to the first aspect of the MOEE's role. The Ministry will remain the setter and modifier of the Guideline. Like the existing Guidelines, the Proposed Guideline sets out no explicit criteria or mechanism for future changes to the Guideline.

However, the Ministry has proposed to change the nature of its Guideline support activities. This change affects its role as Guideline interpreter and assurer.

Under the current Guidelines the Ministry has played an active role advising, checking and approving each step in the clean-up process. It has been involved with individual clean-ups, approving plans before they are implemented, providing advice on how the Guidelines should apply, approving standards for contaminants not listed, and, at the end of a clean-up which satisfies the Ministry, providing a letter to the proponent stating that on the basis of information received, the Ministry is not aware of any reason why the land cannot be put to the use designated.

The Proposed Guideline suggests that the Ministry continue to carry on some of these activities, such as the review and approval of additional criteria for contaminants for which there are no established generic criteria. It proposes that the Ministry be the recipient of notices of completion for individual clean-ups and that the Ministry ensure the registration on title of clean-ups to generic criteria using stratified depth, and/or nonpotable groundwater standards, or Site Specific Risk Assessments (SSRA).

However, the Ministry sets out a less active role for itself under the Proposed Guideline. The Ministry proposes that it not be involved in decisions for individual clean-ups to full depth, potable groundwater generic or background criteria. For these clean-ups, the Ministry proposes that it neither review clean-up plans prior to their implementation nor play an active part in ensuring that the plan is followed. The Proposed Guideline suggests that the Notices of Clean-up filed with the Ministry be certified by Professional Engineers that the clean-up has complied with the Guideline.

The rationale given for the decreased role is that the Ministry currently does not have the resources for these activities. Moreover, the Ministry is unwilling to assume liability for clean-up activities.

Public Comment

Some contributors welcomed the decreased role of the Ministry. Some of these contributors were of the view that less Ministry involvement may help to speed up the process. One commenter stated that the decreased role of the Ministry is appropriate, given the Ministry's legislative mandate.

Other contributors have expressed concern about the decreased role for the Ministry under the Proposed Guideline. For example, some think that the Ministry should continue to be involved at the beginning of each clean-up by approving the clean-up plan and at the end of the clean-up, by indicating that it has been completed to the Ministry's satisfaction. These activities by the Ministry are thought to be necessary to provide clean-up proponents with appropriate assurances: assurance prior to embarking on the clean-up that the plan is adequate to the task and assurance on completion that the job has been done properly. Some respondents suggested that without these assurances fewer clean-ups will take place than the public interest warrants, with the resulting under utilization of currently contaminated land.

In light of this concern, some commenters suggested that the Ministry's role be expanded beyond its range of current activities to include certification of site clean-up and inspection and auditing following clean-up.

Some contributors indicated a concern about the lack of a public authority overseeing the performance of the clean-up. Other contributors stated that Ministry involvement is particularly needed where the Proposed Guideline appears to give insufficient guidance and there is a strong possibility of inconsistent application: for example in ensuring that SSRAs meet proper standards.

Some submitters suggested that the Ministry play an educational role on site clean-up, while others pointed to the potential role of the Ministry in arbitrating disputes between the public (or municipality) and the clean-up proponent.

Other respondents suggested that the Guideline should contain provisions for how changes will be made to it in the future (see Section 4.0 Implementation for further discussion).

Other Ministries stated that the MOEE should be a repository of information and expertise, available for access by others in government and that the MOEE should help co-ordinate governmental clean-up reviews and other activities. Some municipalities and professionals who assist municipalities with clean-ups suggested that the Ministry should continue to provide expertise and advice to municipal governments.

ACES's Discussion

ACES has restricted its comments to the Ministry's role in the site clean-up process itself and does not comment here on the Ministry's interface with other governmental agencies or its role in public education. The reader is referred to other sections for further information on the Ministry's role, such as Section 1.4 Title Registration, Section 1.6 Municipalities and 4.0 Implementation.

Under the current Guidelines the Ministry has played an important role in reviewing and approving plans for individual clean-ups. In doing so, the Ministry has indicated its view of

what procedures (site assessment and sampling, contaminant treatment or removal, consultation with and response to the public, etc.) are consistent with the Guidelines and has assisted with filling in gaps in the Guidelines (for example, clean-up levels for particular contaminants for which criteria were not specified).

These activities and the Ministry's letter to the proponent upon completion have been perceived to provide assurance to the proponent that the clean-up has been undertaken appropriately and completed satisfactorily. The concerns expressed about the decreased role for the Ministry under the Proposed Guideline are connected with the desire on the part of the proponent and public to have such assurances.

ACES thinks that assurance of clean-up quality is important. However, in ACES's view some of the concerns expressed about the reduced role for the Ministry may reflect a misperception of the level of Ministry assurance actually provided under the current Guideline. For example, Ministry involvement in the clean-up process has not relieved the owner of liability for problems connected with a faulty clean-up. Nor has it eliminated the possibility of the need for additional clean-up with the change of clean-up criteria in the future. Nor has Ministry involvement always provided a high level of scrutiny and expertise applied to the clean-up process; resource availability has often not permitted this.

Nonetheless, Ministry involvement provided some real assurances to the proponent and public. It gave some confidence that the clean-up plan corresponded to the Ministry's interpretation of what the Guidelines required. This was particularly important in the context of the existing Guidelines which were sparse on explicit guidance and detail. Ministry involvement in the process also gave some assurance that the clean-up plan proposed by the proponent had been followed.

Accordingly two main alternatives have been proposed by respondents for the Ministry's role under the Proposed Guideline: continue, or even enhance, the essential elements of its present role or reduce involvement.

Alternative A: Continue/Enhance Present Role.

The first alternative, proposed in a number of public comments, is for the Ministry to maintain a level of active involvement in individual clean-ups, including approval of clean-up plans and some indication by the Ministry that the clean-up has been satisfactory. This proposal is motivated by the concern for Ministry assurance of clean-up quality.

In ACES's view, it is unrealistic to expect the Ministry to play an active and effective part in assuring clean-up quality under the current regulatory regime where site clean-up is not mandatory (except in the case of a Director's Order to clean up based on adverse effect) and the Ministry has no specified regulatory responsibility.

It is ACES's opinion that, for the Ministry to perform these tasks, regulatory change is needed to mandate site clean-up under specified conditions and to delineate an active role for the Ministry in the process. Such regulatory change would authorize and provide (perhaps through users' fees) the resources necessary for the Ministry to furnish the needed expertise and staff. British Columbia has taken regulatory initiatives in this area.

It must be noted that regulatory change has not been proposed by the Ministry and was not part of the present consultation. Accordingly, from the standpoint of ACES's comment on the present consultation, it is an alternative which has potential relevance for the future only.

Alternative B: Reduce Ministry Involvement in Individual Clean-ups

The second alternative, set out in the Proposed Guideline, is to limit Ministry active involvement in specific clean-ups to providing advice when general provisions of the Guideline require interpreting, reviewing and approving plans for SSRAs, and registering and filing properly certified Notices of Clean-up. Certification of the clean-up quality is proposed to be provided by a Professional Engineer (for further discussion please refer to Section 1.3 Certification of the Notice of Clean-up).

The critical issue is whether the proposed scheme will provide adequate assurance of clean-up quality. It is ACES's view that this will occur only if:

- I) the third party certification process proves practicable and effective; and
- ii) the Guideline is sufficiently explicit to provide appropriate guidance to clean-up proponents; or
- iii) the Ministry plays a central interpretive role where the Guideline is not explicit.

ACES acknowledges that even if these conditions are met, the assurance sought by some of the commenters (e.g., some lenders, some members of the public) may not be attained. As noted above, ACES thinks that some of the concern about the reduced role for the Ministry may reflect a misperception of the level of assurance actually provided under the current Guidelines. Nonetheless, the proposed move to a lower degree of Ministry involvement has raised valid concerns about the level of assurance the Proposed Guideline will actually provide.

Recommendations

ACES recommends the following principles:

- i) Where the Guideline is to function without Ministry involvement or interpretation, it should be sufficiently precise and detailed to provide adequate direction to those responsible for application to individual clean-ups.
- ii) The Ministry should provide on-going interpretation of the Guideline where ambiguities exist or arise concerning general application of the Guideline to all sites.
- iii) Where the Guideline is insufficiently precise and detailed for application to individual clean-ups, the Ministry should either elaborate in the Guideline or provide interpretation and advice on what action is appropriate. The Ministry should review and approve all plans for SSRA.
- iv) The Ministry should monitor the third party certification method adopted to ensure that it functions to provide assurance of site clean-up quality (for further discussion, please refer to Section 1.3 Certification of the Notice of Clean-up).

In light of the concerns raised regarding assurance, the Ministry should closely monitor the new system, in order to evaluate its effectiveness, with a view to recommending regulatory change, and more direct Ministry involvement, if warranted (for further discussion, please refer to Section 4.1 Revising and Updating Policies and Criteria).

Further recommendations regarding the role of the Ministry are found in various sections throughout this report.

1.2 Notice of Clean-Up

ACES's Understanding of the Proposal Under the Guideline

The Ministry states that in all cases where a clean-up has been undertaken, or where site management controls have been used, a "Notice of Clean-up" is to be provided to the MOEE District Office to serve as a record. The Guideline goes on to state that the Notice is to be certified by a Professional Engineer. Two copies of the Notice are to be submitted to the Ministry and in the case of a full depth clean-up using potable groundwater criteria, one original will be returned to the owner with the "Acknowledgement of Receipt" section signed by the Ministry. For full depth clean-ups to nonpotable groundwater standards, stratified depth clean-up or Site Specific Risk Assessment clean-up/site management measures, upon receipt of the two Notices a Director's Order will be issued to the property owner which will

require the owner to register a Certificate of Prohibition on land title pursuant to Section 197 of the EPA. Upon receipt by the MOEE of the Certificate of Prohibition showing the Registry's Office stamp, the MOEE will acknowledge receipt of the second Notice of Clean-up to the property owner.

Public Comment

While most respondents agreed with the concept of the submission of a Notice of some type at the completion of a clean-up, what that Notice should be comprised of was more controversial. Several respondents suggested that documentation in the form of the consultants' reports or a bibliography of reports and where the reports can be located should accompany the Notice to the Ministry. Others expressed concern regarding the wording of the Notice. The extent of the liability assumed by the consultant was questioned by a number of submitters. Some commented that any consultant would be hesitant to sign-off on the Notice as it is currently worded. In addition, commenters expressed concern that since so much responsibility is assumed by the certifying professional, that he/she will require a rigorous and onerous sampling procedure that may not necessarily be indicated and hence the clean-up costs would rise. Other respondents noted that the MOEE's Acknowledgement specifically says they have not reviewed, considered or commented on the contents of the reports, however the Ministry has indicated that it will be providing review and approval of clean-up plans for SSRA. In this case, it is suggested that the Notice be amended to reflect the MOEE's role in that circumstance.

Recommendation

ACES recommends that the MOEE change the wording of the Notice of Clean-up in light of the public comment received, the MOEE's proposed role regarding approval of Site Specific Risk Assessment plans and ACES's recommendations regarding registration on land title and the certification of the Notice (see Section 1.3 Certification of the Notice of Clean-up and Section 1.4 Title Registration, respectively).

1.3 Certification of the Notice of Clean-up

ACES's Understanding of the Proposal Under the Guideline

In keeping with the proposed role for the Ministry, the Guideline states that the responsibility rests with the owner and his/her consultant to ensure that the clean-ups are carried out and substantiated in accordance with the Proposed Guideline. The Proposed Guideline states:

Currently there are no standard qualifications for environmental consultants. In the absence of standard qualifications and accreditation for "environmental consultants", final reports on site assessment and clean-up, as well as the "Notice of Clean-up"

specified in the following section are to be certified by a professional engineer designated as a Professional Engineer. (p. 15).

The Ministry states that other professional organizations who can demonstrate comparable self-regulation to Professional Engineers may be given the same recognition. In order to gain this recognition, "the association must agree to enter into an agreement with MOEE to ensure minimum qualifications, reporting/disciplinary actions, and a code of practice/ethics are established and enforced" (p. 15).

The certification by the consultant in the Notice of Clean-up states that the consultant certifies that he/she is a Professional Engineer, that the clean-up has been undertaken in accordance with relevant legislation, regulations and the Guidelines and that the consultant is satisfied that sufficient work has been done to demonstrate that the clean-up has been completed in accordance with the Guideline's requirements for the land use specified in the Certificate. The consultant further certifies that he/she is not aware of any environmental conditions affecting the property which would interfere with the land use specified.

Public Comment

A great deal of public comment was received on this issue, the vast majority of which did not support the proposal to have only Professional Engineers certifying clean-ups. Some contributors supported the MOEE proposal and some professional associations made submissions that their associations have similar provisions and provide a comparable level of self-regulation and assurance to that of Professional Engineers (i.e., establishment and enforcement of minimum qualifications, reporting/disciplinary actions, and a code of practice/ethics).

Many contributors emphasized the multidisciplinary nature of site clean-ups and argued that professionals other than engineers were competent to certify clean-ups. Others pointed out that many Professional Engineers had no experience in clean-ups and were not able to provide expertise; nonetheless, the current MOEE proposal would permit them to certify clean-ups.

It was pointed out that the economic and professional well-being of non-engineers active in site clean-up related activities could be significantly affected by the MOEE proposal. Because of the requirement for certification by a Professional Engineer, non-engineers would have difficulty in leading and coordinating clean-up efforts. Clean-up practitioners who are not engineers and who operate in small firms would be particularly affected.

Other contributors suggested that it should be the consulting firm doing the clean-up that makes the certification, rather than an individual professional.

ACES's Discussion

Site clean-ups involve the expertise of many disciplines. That expertise is not found only or always in Professional Engineers. The self-regulation of the engineering profession provides attractive assurance features for an approach relying on non-governmental approval of clean-ups, but does not guarantee expertise or performance.

Some other professional associations may be able to satisfy the MOEE requirements as stated in the Proposed Guideline, but the time and effort required to become a self-regulating profession means that few other professions will be able to do so, at least within the foreseeable future. Many professions currently involved in site clean-ups will not be able to meet the proposed requirements.

ACES is persuaded that excluding qualified practitioners from certifying clean-ups and permitting certification by engineers without clean-up expertise are both inappropriate.

The longer term solution is likely to lie in an established course of accreditation for site clean-up professionals. Accreditation would provide a level of assurance to the site owner and to the MOEE that the practitioner is competent to certify the clean-up. Revocation of accreditation offers a penalty for non-performance and with it the incentive to provide competent services.

In order for such a course of accreditation to become a reality, MOEE must indicate that it supports the concept. Moreover, it may be necessary for the MOEE to play a role in assisting in the development of the accreditation body. In the interim, before accreditation is available, it will be necessary for the MOEE to decide whom it will permit to certify clean-ups.

Recommendations

ACES does not agree with the MOEE's proposal that only Professional Engineers and professions with comparable self-regulation be permitted to certify the Notice of Clean-up. ACES recommends that accreditation be the criterion used to determine which practitioners are permitted to make the certification in the Notice of Clean-up.

ACES further recommends that MOEE facilitate the formation of an inclusive certifying body for these practitioners.

In the interim, ACES recommends that the MOEE develop criteria for acceptable qualifications required for individuals to certify the Notice of Clean-up or continue to provide review and approval of individual site clean-up plans.

1.4 Title Registration

ACES's Understanding of the Proposal Under the Guideline

Upon completion of the clean-up, a Notice of Clean-up is to be submitted to the MOEE District Office. In all cases except background clean-ups or full depth clean-ups using potable groundwater criteria, the Director will issue an Order to the property owner pursuant to Section 18 of the *Environmental Protection Act*. This Order will require the property owner to register a Certificate of Prohibition on title pursuant to Section 197 of the EPA.

The Certificate of Prohibition refers to the Order made by the Director which then refers to the Notice of Clean-up.

There is no provision for voluntary registration on title in cases where the Phase 1 or 2 Environmental Site Assessment have shown that there is no clean-up required because the site meets the generic criteria or where a full depth potable generic clean-up has been undertaken.

The following table, included in the submission made by the City of Toronto outlines the circumstances in which a Notice of Clean-up must be filed and when it must be registered on title.

Table 1.0 REQUIREMENTS FOR NOTICE OF CLEAN-UP/REGISTRATION

Type of Clean-Up	No Clean-up Required Because Site Already Meets the Clean-Up Requirements		Clean Up Undertaken		No Clean-Up Undertaken Because Site Can Be Controlled	
	Submit Notice of Clean-Up to MOEE	Register Certificate of Prohibition on Title	Submit Notice of Clean-Up to MOEE	Register Certificate of Prohibition on Title	Submit Notice of Clean-Up to MOEE	Register Certificate of Prohibition on Title
Full Depth/Potable	No	No	Yes	No	-	-
Full Depth/Nonpotable	Yes	Yes	Yes	Yes	-	-
Stratified Depth/Potable or Nonpotable	Yes	Yes	Yes	Yes	-	-
Site Specific Risk Assessment	-	-	Yes	Yes	-	-
Risk Management Measures Used	-	-	Yes	Yes	Yes	Yes

The reports prepared by the consultants are to be retained by the owners of the property as they will not be kept by the MOEE nor in the Registry or Land Titles Office.

Public Comment

Many comments supported the concept of registration on title as the means of getting notice to future owners and to those with an interest in the land of the extent of the clean-up undertaken. ACES also received a number of comments from members of the public concerning the difficulty in obtaining access to information about sites that have been cleaned up, and requesting that such information be available in future.

Several submissions suggested that MOEE set up and maintain a data base of information relating to site clean-up activities which could be available to the general public instead of registration on title as the land registry system is expensive to access due to the legal fees that are usually incurred.

A number of comments suggested that the document be called something other than a "Certificate of Prohibition" as it has a negative connotation, particularly for a circumstance in which a clean-up has in fact been undertaken in accordance with the Guideline.

A significant number of commenters were opposed to registration on title, generally because they were very concerned about the potential economic impact with respect to difficulties in obtaining financing and future dealings with the property.

One questioned whether registration would be required after a Site Specific Risk Assessment that resulted in an MOEE approved criterion in lieu of a generic criterion.

The ability of MOEE to require the registration of information on title when that requirement is found in a Guideline and the majority of clean-up activities are undertaken voluntarily was questioned by another respondent.

ACES's Discussion

ACES agrees with what we understand the intentions of registration of a Certificate of Prohibition on title following clean-up activities to be: notice to future landowners or others with an interest in the property of the environmental condition of that property and an incentive to clean-up to generic soil and potable groundwater criteria.

However, ACES believes that the system as proposed in the Guideline has several fundamental weaknesses which could make it unworkable.

ACES believes that information about site assessment and clean-up activities should be available to members of the public and to future property owners. However, ACES is concerned that registration of a Notice on Title without a copy of the background documentation will be of little assistance to parties seeking information about the property. As the land registry system is designed to maintain information over a very long term, it is

unrealistic to rely on the owner from time to time being able to maintain copies of the documents, particularly after the property has changed hands several times, or has been subdivided. In ACES's view, the registration of a Notice on title unsupported by publicly accessible and maintained documentation is contrary to current information management and record keeping practices.

ACES is also concerned that use of the land registry system is a very expensive way to record this information, as it was not designed for this purpose. As well, it is our understanding there are many areas of the province where such registration cannot occur: Crown lands, First Nation reservations, etc.

ACES believes that for information to be truly useful, those who investigate their property and find that there are no problems and therefore do not proceed beyond step one and those who clean-up to a full depth clean-up should be able to have this information readily available to interested parties.

ACES is also concerned that the process of registration on title being proposed in the Guideline relies on the issuance of a Director's Order. We share the public's concern that the issuance of such an Order may not be enforceable.

As an alternative which ACES believes will achieve the goals intended by registration on title and which will also serve as a useful information source for the public, ACES supports the suggestion of the MOEE maintaining a publicly accessible data base of documents concerning site clean-up activities and assessments of all types. Purchasers and others proposing to acquire an interest in the property could search this data base as they do municipal building department records.

Any site assessment or clean-up documentation that complies with this Guideline should be admitted to the data base. However, only those where a clean-up was undertaken would be required to be entered. Therefore, it would be the owner's option whether to submit documents in cases where Phase 1 or 2 ESA showed no need for a clean-up.

ACES is also concerned about the potential negative economic impact of the MOEE's proposed registration on title in only some cases. Attempts to avoid registration could, in some instances, encourage "dig and dump" which may not be the most efficient or appropriate strategy.

Recommendations

ACES supports the principles of full disclosure as to the environmental condition of a property to individuals with an interest in that property, however ACES does not agree with registration on land title as proposed in the Guideline.

Instead, ACES recommends that the MOEE create a publicly accessible data base of documents and information concerning site assessments and clean-ups undertaken under this Guideline. The owner of the property would be required to place the documents in the registry where a clean-up had occurred. In addition, the owner could voluntarily have documents added to the data base including those where no clean-up is required, for example a properly certified Phase 1 Environmental Site Assessment document indicating no need for a clean-up. ACES believes this solution will address concerns regarding future access to reports.

ACES recommends that the MOEE undertake a public education campaign to publicize the existence of a registry (see further recommendations in Section 1.5 Public Consultation, Section 1.7 Economic Concerns and Section 4.0 Implementation).

1.5 Public Consultation

ACES's Understanding of the Proposal Under the Guideline

The public's right to be kept informed on site clean-ups is identified as one of five principles which guided the development of the Proposed Guideline. The MOEE "encourages" the formulation of a communication plan to "provide information" to the public under Step 1 of the process, for Site Assessments.

Under Step 3 of the process, for Site Clean-up, the MOEE notes that "public consultation should begin before the clean-up begins". "Public consultation/notification" is listed as one of the elements that may be included in a Site Clean-up. Under the Site Specific Risk Assessment (SSRA) section, it is indicated that a community based public consultation program is to be developed and implemented to ensure that the public is aware of and has the opportunity to participate in the SSRA and in the development of the remedial plan.

Under the Public Consultation section, the MOEE encourages communication with the public at each step of the process. It indicates that notification of the public should take place at least 30 days before the implementation of the clean-up plan. It recommends that public consultation should be undertaken in support of any clean-up related to a land use change.

Public Comment

Respondents put forward highly divergent views on the role of the public in site assessments and site clean-ups. A few felt that the public should not be consulted at all because of the complexity of the issues and the expense added to the undertakings as a result. A number indicated that the public's role should be expanded and enhanced; that the public should be involved in the actual decision-making. Other respondents indicated that the public's role should be confined; that the public should be informed but not involved in decisions affecting private property unless there was the potential for an impact on the community.

One respondent suggested that public consultation should be mandatory and that the Ministry should be involved in approving consultation plans. Another respondent proposed that the Ministry be involved as an arbiter to settle disputes between proponents and the public. A few respondents suggested that funds should be provided to the public to assist with its participation in the process. Some felt that the main forum for public consultation should be through the provisions of the *Planning Act*.

Respondents seemed to agree that the Guideline does not provide adequate direction as to when public consultation is required and what that entails. Respondents indicated the need for clarification on the requirements and goals at each step of the process.

One respondent suggested that public consultation should not apply to SSRAs at all. Several respondents suggested that public consultation should not apply to small sites; that it should apply only to larger or more complex undertakings. Others felt that it should be required, not merely recommended, when adverse impacts are possible, when SSRAs are undertaken, and when generic clean-ups are undertaken in densely populated areas. One respondent suggested that it should be required for all clean-ups other than full-depth/potable groundwater clean-ups. One respondent indicated that the public consultation requirements of the *Planning Act* are appropriate for generic clean-ups. The same respondent indicated that more extensive public consultation is needed for SSRAs.

A number of respondents addressed themselves to the means of sharing information on the contamination status of a property with future owners and other interested parties. Several respondents proposed the institution of a central registry. Some respondents felt that all correspondence and all reports associated with a site clean-up should be filed in the registry to be made available to all interested parties. One respondent suggested that the registry should contain information on the status of all properties, both positive and negative. In this case, notices would be submitted to the Ministry after Steps 1 and/or 2 as well as at Step 4. One respondent proposed that the central registry could be instituted instead of the title registration proposed by the Ministry (for further discussion, please refer to Section 1.4 Title Registration).

Some respondents felt that the public should be provided with full access to all reports associated with site assessments and site clean-ups. Others suggested that these reports should not be shared with the public because they contain confidential information. One respondent proposed that all confirmatory sampling results and reports should be made available to neighbours for inspection while all other reports should be shared with future property owners only.

Several respondents indicated the need for the public to be notified about a site assessment at Step 1 of the process. One respondent suggested that the Environmental Bill of Rights (EBR) process could be used to announce a Step 1 ESA. Another respondent suggested that a proponent should post a sign on his/her property to announce his/her intention to

decommission a property. One respondent indicated that the process should require immediate notification of the public, the Ministry and the municipality following confirmation that soil/groundwater quality exceeds the Guideline criteria (Step 2).

ACES's Discussion

As discussed in the Title Registration section of this report, ACES believes that future property owners need to have access to the reports which provide details on the type and extent of contamination on their properties, on the clean-up strategy undertaken, and on the clean-up criteria achieved. ACES believes that neighbours and members of the community should also have access to this information so they can satisfy themselves that their health, their property and the environment upon which they depend is being adequately protected.

ACES believes that the public should be consulted about any site assessment and/or site clean-up which could result in a negative off-site impact.

Where generic or background criteria are being applied, and there is the potential for negative off-site impacts to occur during the actual clean-up, the public must be consulted on the mode of clean-up. With the exception of the nonpotable groundwater criteria, ACES does not believe that the proponent should have to defend the application of the generic criteria to the public.

Where a Site Specific Risk Assessment is applied, and there is the potential for negative off-site impacts to occur during or following the clean-up, the public should be consulted on the clean-up criteria or strategy to be applied as well as upon the mode of clean-up.

For those SSRAs directed towards the development of site specific criteria or actions that provide less protection than the generic criteria, ACES believes that the Ministry must ensure that the public is appropriately consulted.

Recommendations

ACES recommends that the registry referred to under Section 1.4 Title Registration be publicly accessible.

ACES recommends that the Ministry should expand the Public Consultation section of the Proposed Guideline to clarify the circumstances in which the public should be involved, giving consideration to:

- the type and extent of contamination;
- the potential for negative impact to neighbours, the community, and/or the environment;
- the nature of the site (e.g., a sensitive site);

- the site clean-up strategy and criteria being applied (e.g., stratified nonpotable, long-term risk management);
- the step in the site assessment/clean-up process.

For the various circumstances identified, the Guideline should provide more direction as to:

- a) the desired objectives of public involvement (e.g., to elicit historical information, to mitigate the negative impacts associated with clean-up, etc.);
- b) the role of the public (e.g., to be notified, to be consulted, to participate in decision making);
- c) the methods that should be applied (e.g., by meetings, newspapers, neighbourhood notices etc.);
- d) the timing of the public consultation;
- e) the role of the Ministry.

ACES recommends that the Ministry should conduct a broad based public consultation when it designates those regions of the province to which the nonpotable groundwater criteria can apply (see Section 2.5.2 Potable/Nonpotable Groundwater).

ACES recommends that the Guideline specify that public consultation must be conducted by the proponent whenever he/she applies for the application of nonpotable groundwater criteria outside of the areas designated by the Ministry.

For Site Specific Risk Assessments (SSRAs) directed towards the development of site specific criteria which may be less stringent than existing generic criteria and/or towards the development of a risk/site management plan, ACES recommends that the Ministry review and approve the consultation plan as part of its review and approval of the SSRA.

ACES recommends that the Guideline's public consultation requirements should be developed to avoid duplication with, and to take advantage of the provisions of, the public consultation requirements in the Environmental Bill of Rights, the *Planning Act* and the *Environmental Protection Act*. The Guideline should indicate what those other requirements are and when and where they apply.

In addition, ACES recommends that the MOEE monitor the public consultation provisions of the Guideline over time and revise them as appropriate.

ACES recommends that where generic or background criteria are being applied, and there is the potential for negative off-site impacts to occur during the actual clean-up, the public should be consulted on the mode of clean-up.

1.6 Municipalities

ACES's Understanding of the Proposal Under the Guideline

Municipalities will have a number of roles and responsibilities under the Proposed Guideline. The Guideline contemplates that municipalities may use it as a condition of a municipal permit, for approval of plan of subdivision, or as a condition of rezoning.

Municipalities may also own land which requires clean-up.

Municipalities are expected to provide concurrence for the use of Site Specific Risk Assessments and are expected to assist proponents in determining whether generic criteria provide adequate protection for ecologically sensitive sites.

As part of a Phase 1 ESA, the Guideline suggests that government officials including municipal officials be contacted to provide information about past and present uses of the site.

The Guideline also suggests that it may be referred to in regulations, guidelines or policies developed by other provincial, federal and municipal agencies.

Public Comment

ACES received a number of comments which questioned whether municipalities had the resources or expertise to undertake the responsibilities placed upon them by this Guideline, particularly in light of the limited role proposed for the MOEE.

ACES received comments suggesting that clarification of what was meant by municipal concurrence with Site Specific Risk Assessments was needed. One commenter opposed municipalities having this role, in that it in effect provides municipalities with the opportunity to make decisions about Site Specific Risk Assessments on a political basis. ACES also received several comments which suggested that a municipality may not be equipped to deal with sensitive site issues (see Section 2.3 Sensitive Sites).

Municipalities were concerned about potential liability arising out of their role as an approval authority and were generally reluctant to accept the responsibility. An exception was the City of Toronto which felt that the municipality was the appropriate agency to make decisions on sensitive site issues.

The need to provide clear linkages with the *Planning Act*, including the proposed revisions under Bill 163 and other legislation enforced by the municipalities was raised.

ACES's Discussion

ACES believes that many municipalities will lack the resources and expertise to undertake many of the functions apparently assigned to them by the Guideline. This will be particularly true for smaller municipalities. Most municipalities do not have the resources to review and interpret reports under this Guideline that could be generated by proponents. It is not clear under the Proposed Guideline whether the MOEE intends to provide support to municipalities for that purpose.

While ACES is concerned about uneven application of the Guideline across the province, depending on the resources and development agendas of different municipalities, we also believe that it is appropriate for the municipality to have a role in the approval of Site Specific Risk Assessments as proposed by the Guideline, except for cases involving sensitive sites and where there are no generic criteria for a particular substance. It must be recognized that many site assessments and clean-ups are being done in the context of a land use application, for which the municipality is the approval authority. For these applications of the Guideline, applicants dissatisfied with the municipality's decision have the same appeal and review rights as for any other aspect of the development.

ACES is of the view that the Guideline could be improved by providing more guidance on how municipalities should link their functions under the *Planning Act* with the standards in the Guideline. (This could be part of a companion document, if properly cross referenced and referred to in the Guideline.)

Recommendations

ACES recommends that the MOEE provide on-going technical and scientific support to municipalities as required by them to fulfil their mandate under the Guideline.

With regard to the role of municipalities in SSRA, ACES recommends:

- 1) that municipalities only be required to concur with the use of Site Specific Risk Assessments in cases where site specific criteria are being used in lieu of generic criteria or where risk management/site management plans are being used;
- 2) that the Guideline be clarified to indicate what is meant by municipal concurrence;
- 3) that the Guideline clarify that municipal concurrence with the use of a Site Specific Risk Assessment does not mean that the municipality is the review and approval authority, which responsibility should be undertaken by the MOEE.

1.7 Economic Concerns

ACES's Understanding of the Proposal Under the Guideline

The Ministry conducted an economic assessment and reported the findings in the "Economic Assessment of Case Studies Based on Proposed Ministry Guidelines for Clean-up of Contaminated Sites". In this assessment, the cost of clean-up under the current Guideline was compared to the cost of clean-up under various conditions when applying the Proposed Guideline at seven sites. Only the costs of using the generic approach were assessed. The Ministry made no attempt to compare the costs when applying the Site Specific Risk Assessment approach.

The Ministry's economic assessment was comprised of three case studies conducted by the Ministry and four case studies conducted by a consultant contracted by the Canadian Petroleum Products Institute (CPPI). Based on these seven case studies, costs decreased in eighteen scenarios and increased in twenty-one. Cost decreases were particularly notable where protection of potable groundwater was not required, where mercury contamination was present, and where stratified depth clean-up was chosen. Cost increases occurred under scenarios where potable groundwater protection was required, where clay type soil was present or where lead contamination was significant.

Twelve of the 18 scenarios in which costs decreased resulted from allowing the stratified approach. It was concluded that the potential for lower costs were significant as a result of the flexibility introduced in the Guideline. It was assumed that the cost savings would be even greater if the flexibility added by the inclusion of the SSRA and long-term risk management scenarios was considered.

Public Comment

One submission provided an economic assessment which compared the costs of remediating a "typical service station site" to generic criteria contained in the Proposed Guideline to those associated with a Level III Clean-up conducted under the Interim Guidelines for the Assessment and Management of Petroleum Contaminated Sites in Ontario. In this assessment, it is reported that a clean-up to stratified depth/nonpotable groundwater criteria would increase costs by 50% and that remediation to full depth/potable groundwater criteria (to avoid the soft costs associated with title registration) would increase costs by as much as 400%. For both sites included in this assessment, the soil type was clay whereas the generic criteria assume that the soil type is sand. No attempt was made to estimate the costs of applying a SSRA option.

A number of respondents expressed concerns about the impact the Ministry's new role will have on them; it is implied that development in the province will be adversely affected by the Ministry's unwillingness to give approvals to clean-ups on specific properties. Financial institutions and municipalities have expressed concern about the environmental liability they

will have to assume for properties that have not been officially approved by the Ministry. Developers are concerned that they will be unable to get the zoning change approvals they require from municipalities, and small and medium sized businesses fear that they will not be able to get the financing they require to refinance or expand their existing operations.

A number of respondents have indicated that the generic criteria are too stringent; that it will be too costly to meet them; or that it may not be possible to achieve them with on-site remediation technologies. The stringency of the generic criteria, it has been argued, may encourage a "dig and dump" approach, a strategy which may have worse impacts on the overall environment.

Other respondents have indicated that the SSRA process, complete with its public consultation requirements, is too expensive to be useful on smaller properties.

Several respondents have raised concerns about registration on title; they feel that it will have an enormous impact on the market value of their properties. Some have argued that the stigma attached to a Notice of Prohibition is unfair given that it will be attached to all those properties that have undergone a clean-up to Ministry sanctioned generic criteria or to Ministry sanctioned site specific criteria.

A few respondents have suggested that the Guideline should not be finalized until a thorough economic assessment has been conducted to assess the impact of the Guideline and its criteria on the overall economy of the province. Others have proposed that the Guideline should allow proponents to conduct a cost/benefit analysis for individual sites; costs would then become a consideration when deciding upon the clean-up strategy and criteria.

Respondents have been quick to point out the larger social, environmental and economic costs associated with any guideline which results in clean-up costs which discourage clean-up. It has been argued that contaminated sites located in the inner core of cities like Toronto will be left uncleaned and undeveloped which may pose a risk to the environment and to public health. At the same time, development pressures will build on "green fields" where the costs of development are less; increasing development pressures on agricultural land, increasing demand for highways, increasing air pollution, etc.

A number of respondents have pointed out that there is an urgent need for legal liability issues to be addressed by the province. One respondent argued that until the liability issues are addressed, the Guideline, with its attendant costs, will make it impossible for small and medium sized businesses to stay in business. Already, they say, they are being forced out of business by their inability to refinance their operations; the banks are simply unwilling to assume the risk of their unknown environmental liability. Large urban centres, they argued, may be saddled with the liability of numerous orphaned sites where the costs of remediation make re-development and re-use economically impossible.

ACES's Discussion

The Ministry has made no attempt to assess the overall impact of this Guideline on development in the province or on its economy as a whole. No assessment has been made of the effect this Guideline will have on industry, investment or development in the province in the coming years. The Ministry has not attempted to estimate the overall costs that will result directly from the assessments and clean-ups undertaken with this Guideline.

In its economic assessment, the Ministry has narrowly focussed its attention on the costs associated with clean-up to the generic criteria in a number of case studies. It has not estimated the costs associated with a clean-up undertaken to criteria determined with a Site Specific Risk Assessment; nor has it estimated the costs associated with the risk management option allowed under this Guideline. The Ministry's economic assessment includes no predictions about the frequency with which proponents will select the SSRA or risk management options over the generic clean-up criteria.

The Ministry's economic assessment compares the costs for clean-up under the Proposed Guideline with the costs for clean-up under the current Guidelines; it never questions whether the current Guidelines are the proper benchmark for comparison. The Ministry's assessment fails to compare the costs associated with the administrative, consulting, and testing requirements contained in the Proposed and current Guidelines; it considers the costs for clean-up only. The Ministry's assessment makes no estimate of the costs that may result from the addition of 117 contaminants to the current list of 22. When dealing with contaminants such as lead, where the criteria have been recently revised, the Ministry assumes that the earlier less stringent criteria will continue to be applied when using the current Guideline while assuming that the new more stringent criteria will be applied under the new Guideline.

ACES acknowledges that the generic criteria have been developed in a conservative way that may be more costly to apply. However, we also recognize that the Ministry has introduced the potential for considerable cost savings and flexibility by developing stratified soil and nonpotable groundwater criteria. The Ministry's economic assessment does attest to the considerable savings potential provided by both of these options.

ACES also recognizes that the SSRA option provides proponents with the opportunity to vary any one or more of the conservative assumptions employed in the development of the generic criteria where he/she can demonstrate that the assumptions do not apply to their specific sites. We believe that this option will also provide proponents with the potential for cost savings while still protecting the health of the public and the environment.

ACES does acknowledge that the SSRA requirements do need to vary according to the situation. In situations where only one parameter is being challenged, for example, for a site with clay soil type instead of sand, it may be appropriate to streamline the SSRA process to

make it more affordable. We believe however, that this kind of fine-tuning can be addressed in the Guideline and in the documents appended to it.

ACES also recognizes that the SSRA approach contained in the Guideline may be onerous when conducting clean-ups on a large number of small sites with similar contaminants and similar features. For this reason, ACES has recommended that the Ministry study the option of a "class risk assessment" (see Section 2.6 Site Specific Risk Assessment and Risk Management for more details).

ACES believes that the long-term risk management approach allowed by this Guideline addresses many of the cost concerns raised by respondents. We believe that this approach may be most useful when addressing situations where on-site remediation to generic criteria is not technologically feasible or where the Ministry deems that site management poses fewer environmental risks than the other available alternatives.

ACES is concerned that registration on title as currently proposed could unfairly affect the market value of the registered properties. ACES believes that the Title Registration process as currently proposed is too cumbersome and too awkward to fairly meet the needs required by this Guideline. We feel that a central registry which records both positive and negative findings will provide prospective buyers, future owners and the public with more useful information without unfairly stigmatizing a particular property (See Section 1.4 Title Registration, for further discussion).

ACES is sympathetic to the need for assurance about the quality of the site assessment and site clean-up. For this reason, we have focussed considerable attention on the role of the Ministry, on the certification of the Notice of Clean-up, on the Phase 1 Environmental Site Assessment and on title registration. Our recommendations on these issues are outlined in their respective sections.

The concerns raised regarding legal liability are appreciated by ACES. As stated in the introduction, however, we consider that these issues are beyond the purview of this consultation and the scope of this Guideline. While ACES is sympathetic to the desire for a full socio-economic analysis of the Guideline, we believe that the public would not be better served by delaying the implementation of the Guideline while such an assessment is undertaken.

Recommendations

ACES recommends that the Ministry should establish a process or system to monitor carefully the socio-economic impacts of this Guideline in the coming years with the goal of making adjustments and revisions when necessary.

ACES recommends that the Ministry intensify its efforts to resolve the uncertainties around the legal liability issues which surround site clean-up.

2. Clean-Up Steps and Options

2.1 Phase 1 Environmental Site Assessment (Phase 1 ESA)

ACES's Understanding of the Proposal Under the Guideline

This first step of the site assessment process involves the systematic gathering of information to identify actual or potential contamination or sources of contamination. According to the Guideline, this assessment may include: reviews of property histories through the use of aerial photographs, insurance maps, land title searches, regulatory agency records, company records, etc.; interviews with present and past site occupants, government officials, neighbours, etc.; and site visits. Phase 1 ESAs do not usually involve the collection and analysis of samples. If there is reason to suspect the presence of contamination, the property owner/consultant should proceed to Step 2 with further investigation. If no potential problem is uncovered, this is the end of the process; the Ministry is not informed in any official way in this circumstance.

Public Comment

Certain respondents expressed concern that the Phase 1 ESA process, as described in the Guideline, will encourage "see and smell" inspections and inadequate attention to history of site use or specified site conditions. A need for MOEE clarification with respect to Phase 1 ESA procedures was identified. Several commenters indicated that the Proposed Guideline provides too little direction as to how Phase 1 should be undertaken. A few respondents identified the need to identify a group of professionals as certified site assessors and there were several proposals on how this could be achieved.

A more extensive archival site history examination and process was recommended as part of Phase 1 ESA. Some comments focussed on the need for a minimum sampling regime as part of Phase 1 ESA. The discretionary powers of field practitioners undertaking the Phase 1 ESA was raised as a concern by some commenters, particularly given the fact that the motivation to "find" contamination is client driven.

Suggestions were received that all reports associated with the Phase 1 ESA be reviewed by the MOEE and be made publicly available.

ACES's Discussion

Phase 1 ESA represents a decision point upon which decisions to do further analysis, sampling and, ultimately, perhaps clean-up hinge. Traditionally, no sampling is conducted in a Phase 1 ESA. ACES believes that sampling regimes should be covered at Step 2 of the assessment in accordance with the appropriate sampling documents.

More guidance is required in the Guideline regarding what constitutes a Phase 1 ESA. Excellent resources currently exist which provide detailed requirements for completion of Phase 1 ESA, for example, the Canadian Standards Association (CSA) publication Z768-94 *Phase I Environmental Site Assessment*.

Since Phase 1 is the first step in determining the potential presence of contamination and the need for a clean-up, assurance of the quality of the Phase 1 assessment is critical. An increased level of certainty and assurance would be provided by ensuring that Phase 1 ESAs were conducted by qualified practitioners. As well, ACES considers that Phase 1 ESA documents should be publicly available (see Section 1.4 Title Registration).

Recommendations

ACES recommends that the MOEE recognize that Phase 1 ESA must be done at the level of practice of the Canadian Standard Association standard or equivalent.

ACES further recommends that, due to the crucial role that Phase 1 ESA plays in site assessment and clean-up as a decision point as to whether or not any further action is required, the MOEE require that all Phase 1 ESAs be performed by certified site assessors.

2.2 Sampling and Analysis

ACES's Understanding of the Proposal Under the Guideline

The purpose of the *Guidance on Sampling and Analytical Methods for Site Clean-ups in Ontario* document was to provide guidance on sampling and analytical methods for those involved with site clean-ups and to outline sampling and analytical methods which are acceptable to the MOEE.

The MOEE acknowledges that clean-ups are site specific and that no single protocol can cover all situations and conditions. General principles are provided where detailed methods could not be included in the document. Guidance on biological materials and Environmental Risk Assessments is not included.

Public Comment

Comments from the public on the usefulness of this document were mixed. Some respondents welcomed the guidance that the document provided while others were critical of its lack of clarity and questioned its usefulness given the availability of other sampling and analytical guidance documents from other jurisdictions.

Numerous specific comments were received on sampling equipment, depth of sampling, composite sampling and number of samples to be taken, as well as analytical methods for specific contaminants and groups of contaminants, and associated quality control procedures. A number of comments were received concerning the cost and practicality of sampling for all 117 contaminants provided in the Guideline. These comments are summarized in detail in Appendix 3, page 190.

ACES's Discussion

ACES suggested that, while the sampling document does provide some guidance to proponents, it is not detailed enough to satisfy the requirements of those undertaking the sampling and subsequent analysis at clean-up sites. ACES considers the CCME Manual entitled *Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites* (1993) to be a more useful document for the MOEE's stated purpose. ACES considers the MOEE could also provide references to other manuals prepared in other jurisdictions, such as the U.S. EPA and ASTM.

ACES suggested that linkages between the Sampling and Analysis document and the Guideline be documented in the Guideline to improve its clarity (e.g., exceedance policy for groundwater). A discussion on Data Quality Objectives, perhaps with reference to the CCME Manual, would enhance the MOEE's discussion on quality assurance/quality control.

Some specific concerns were raised regarding soil, surface water and sediment sampling which will be forwarded to the Ministry. ACES remains unclear as to why there are different policies regarding exceeding criteria for different media. ACES recognizes that there is a need to minimize the amount of data to be gathered due to associated costs, however, this must be consistent with the need to mathematically evaluate the uncertainty.

It is ACES's understanding that the MOEE's intention is for the proponent to sample for only those contaminants which are indicated after a Phase 1 Environmental Site Assessment.

Recommendations

In order to provide the necessary guidance to field practitioners and to avoid duplication of effort, ACES recommends that the MOEE prepare a document which serves as an interface between the Guideline and other existing sampling and analysis documents, such as the CCME manual.

ACES recommends that the MOEE review comments and concerns raised in public submissions and ACES's review and address any relevant omissions, gaps or inconsistencies.

To provide greater clarity and guidance in the Guideline document, ACES recommends that linkages be identified and cross-referenced to the interface or sampling and analysis reference document in the Guideline.

2.3 Sensitive Sites

ACES's Understanding of the Proposal Under the Guideline

The Guideline defines three distinct types of sensitive sites. The first type of sensitive site is one which is ecologically sensitive. These are generally defined as affecting sensitive habitats, species or ecosystems as well as those areas designated as environmentally significant areas in official plans or designated as ecological reserves, areas of natural and scientific interest (ANSI) or provincially significant wetlands by the Ministry of Natural Resources.

For ecologically sensitive sites, the Guideline suggests consultation with the local MNR office, the Conservation Authority or the municipality to ensure that the generic criteria provide adequate protection. If they do not, then background criteria or criteria developed through a limited Site Specific Risk Assessment can be used.

The second type of sensitive site is defined as one where "conditions exist on site that result in the direct discharge of groundwater to surface water in excess of (sic) a tenfold dilution factor utilized in development of generic criteria". This apparently is intended to deal with situations where there is less than 10 times dilution of contaminants in the groundwater before it discharges to surface water. In this case, clean up to background levels or a limited Site Specific Risk Assessment can be undertaken.

The third type of sensitive site is one where surface soil pH is outside the range of 5 to 9 or subsurface soil pH is outside the range of 5 to 11 and the inorganic parameters on the site exceed background concentrations. In this case, the local MOEE District office in consultation with the Standards Development Branch will provide additional guidance on standards to be used.

Public Comment

Most of the comments we received supported the Guideline's approach to sensitive sites and the criteria used to define them, although some questioned whether this was necessary given the existing regulation of discharges to waterways and wetlands.

We did receive several comments that the ecologically sensitive sites were vaguely defined. We also received comments suggesting that regionally significant ANSIs and wetlands should be included and that the nature of the contaminant or the detection of multiple chemicals known to act on the same systems should be considered in the designation of a sensitive site.

Some questioned whether the Ministry of Natural Resources, the Conservation Authority or the Municipality would have the necessary information or expertise to decide whether the generic criteria were adequate to protect the environment in any particular situation and that as the developer of the generic criteria, the Ministry of Environment and Energy would be in a better position to provide this assistance.

Another submission suggested that there should be an exemption for this type of sensitive site in urban areas where land has already previously been zoned for commercial or industrial purposes, and suggests that it was an inappropriate constraint in existing urban industrial environments.

With respect to sensitive sites identified on the basis of direct discharge of ground to surface water, we received comments that without extensive testing, an owner or its consultants would not be able to determine whether such dilution factors exist and that there are likely to be a large number of such sites to which the generic criteria could not be applied. These comments likely arise from the apparent error in the text which appears to suggest that dilution must be in excess of ten fold rather than less than ten fold for a sensitive site.

With respect to soil pH, ACES received comments that the range of soil pH for sensitive sites should be somewhat smaller, that is those with soils of pH less than three or greater than eleven.

ACES's Discussion

With respect to ecologically sensitive sites, ACES believes that the Guideline's general definition is too vague and that the Guideline does not adequately identify at what stage this determination should be made. Figure 5.1 of the Proposed Guideline entitled, Overview of Clean-up Process, indicates that this will happen in Step 2 during the site sampling and analysis phase but that is not clearly reflected in the text. ACES believes that Step 2 is the appropriate stage for this determination.

ACES agrees that as the Ministry of Natural Resources, the Conservation Authorities and municipalities were not involved in the development of the generic criteria, it is unlikely that they will have the expertise, in most cases, to determine whether they are adequately protective of the environment in any particular situation. The MOEE, as the generator of the generic criteria, is more likely to have the expertise to undertake this task in a reasonably efficient way, although assistance about the nature of the site is more likely to be available through these other agencies.

The question of what constitutes "adequate protection" is also not well defined nor is there any indication of how much information an owner will have to develop on a specific site to demonstrate that this standard has been met. Further guidance should be given.

ACES's understanding is that in most cases, regionally significant ANSI's and wetlands are likely to be designated as environmentally sensitive areas in official plans and do not require separate recognition. ACES also understands that the nature of the chemical is already incorporated in the levels for generic criteria and therefore there is no need to designate a site as sensitive due to the presence of certain chemical parameters. Combinations of chemicals should be assessed further as data are available.

Other than the identification of environmentally significant areas and other significant areas identified by MNR, the Guideline is silent about ecologically sensitive areas designated by other agencies or different types designated by MNR. These could include fish habitats, etc.

ACES is concerned that the Guideline appears to suggest that the appropriate way to deal with sensitive sites is to clean-up to more stringent criteria as clean-ups to background are always permitted. This may result in the destruction of the very features that have resulted in the designation of the site as sensitive.

With respect to the second type of sensitive site, those with a direct discharge of ground to surface water, ACES had difficulty in understanding the definition, and when and how it should be applied. The Guideline should explicitly state how, without detailed hydrological testing and monitoring, an owner or consultant is to determine what the dilution factors from ground to surface water are. If they cannot be determined without such efforts then ACES's view is that it would be inappropriate to require each owner to take the responsibility to verify whether this condition exists.

With respect to soil pH, ACES understands that the data used to develop the generic criteria only consider pH ranges from five to nine for surface soils and five to eleven for subsurface soils and that the effects of inorganics vary significantly at different pH levels. However, it is also our understanding that significant areas of the province, particularly in the north, have soils with pH less than five. If limited Site Specific Risk Assessments or clean-up to background criteria are required in those cases, a streamlined approach would assist in encouraging clean-up in those areas. Given the large area of the province likely to be affected, ACES believes that it is important that the MOEE develop as many generic criteria as possible for inorganic parameters in soils with low pH.

With all types of sensitive sites, the Guideline should clarify whether consultation should or must occur and whether alternative criteria may or must be applied.

ACES agrees that public consultation, municipal concurrence and peer review should not be required for Site Specific Risk Assessments undertaken in these cases as they are required due to the inapplicability of the generic criteria and not at the option of the owner.

Recommendations

ACES recommends that the MOEE provide guidance to proponents on whether generic criteria are adequately protective for areas determined to be sensitive sites under the first criterion (ecological sensitivity).

In order to determine whether there is a sensitive site based on ecological sensitivity, ACES recommends that owners and their consultants be required to consult with the local municipality, the Ministry of Natural Resources and the Conservation Authority.

ACES further recommends that the definition of a sensitive site be expanded to coordinate with provisions of the *Planning Act* and other agencies' definitions of sites which would meet the general description.

ACES recommends that the Guideline clarify that identification of sensitive sites occurs at Step 2 of the process outlined in the Guideline.

In addition, ACES recommends that the Guideline be amended to clarify the definition and identification of sensitive sites based on dilution factors of ground to surface water discharge.

ACES recommends that the MOEE develop generic criteria for use in the areas of the province with soil pH less than five for inorganic parameters to eliminate the need to undertake limited Site Specific Risk Assessment in those cases, and that until such criteria are available, that the MOEE use a streamlined process for limited Site Specific Risk Assessments in these cases.

2.4 Clean-up Approaches

ACES's Understanding of the Proposal Under the Guideline

The MOEE has proposed a process for determining the best clean-up approach for contaminated sites. The three clean-up approaches proposed are: Background, Generic Criteria and Site Specific Risk Assessment (SSRA).

The background approach can be utilized for any site and the MOEE provides 87 soil clean-up criteria which are based on Ontario Typical Range values. Guidance is provided by the MOEE on how proponents can develop new background criteria.

The generic approach is likely to be the approach used most commonly for clean-up. Criteria values are provided for 117 contaminants and one of the features of the generic approach is that it offers flexibility with respect to clean-up options. Criteria are provided for three land use designations, as well as stratified and nonpotable groundwater clean-ups.

The Site Specific Risk Assessment option may be used to assess sensitive sites and to develop more protective criteria than the generic criteria, develop generic criteria when generic criteria are not provided, develop site specific criteria in lieu of using generic criteria and develop risk management/site management plans.

Public Comment

There was a great deal of support, in general, for the framework for the clean-up approaches as it provides flexibility with respect for generic applications and allows for the site specific considerations under the SSRA option. The features that were most noted by respondents were the increased number of contaminants and the use of stratified and nonpotable clean-up options.

Some general concerns were raised regarding the clarity of the decision-making process and the resultant clean-up options.

Some respondents indicated that the options to use SSRA and to develop local "background" levels may permit less stringent clean-ups which may provide an unacceptable "loophole" in the Guideline.

One submission indicated that a generic site sensitivity analysis consistent with the MOEE's Interim Guideline should be included as part of the SSRA option.

ACES's Discussion

ACES supports the overall framework and clean-up approaches proposed in the Guideline, subject to ACES's specific recommendations (See Section 2.5 Rationale for the Generic Criteria and Concerns Regarding Specific Levels and Section 2.6 Site Specific Risk Assessment and Risk Management). ACES considers that the inherent flexibility of the proposed clean-up options and, in particular, the provision of SSRA, provides proponents with a reasonable framework and practical alternatives to assess conditions at individual sites.

Recommendation

ACES recommends that the MOEE adopt the proposed clean-up approaches, including the use of SSRA, in the final Guideline.

2.5 Rationale for the Generic Criteria and Concerns Regarding Specific Levels

ACES's Understanding of the Proposal Under the Guideline

A Generic approach to site clean-up is proposed by the MOEE, in addition to the Background and Site Specific Risk Assessment approaches, and is likely to be the most common clean-up undertaken. Generic criteria are provided for different land use categories (Agricultural, Residential/Parkland, Industrial/Commercial), two groundwater protection levels (potable, nonpotable), and two clean-up types (full or stratified depth).

The generic approach to clean-up is based on the provision of human and ecological effects based criteria for approximately 117 contaminants in soil, groundwater and sediment. The MOEE acknowledges that conservative exposure scenarios likely to produce an impact to sensitive receptors were used in the development of generic criteria levels.

Three land use designations are provided which represent many different potential exposure scenarios and receptor characteristics. The most sensitive receptor and exposure scenario with the highest potential for impact for each land use category was used to establish the generic criteria.

The MOEE based the development of the generic criteria on an approach used in Massachusetts, which was largely based on human health effects. The Massachusetts approach has undergone extensive public review in the U.S. and where possible, the approach was modified for Ontario by substituting Ontario or Canadian data such as analytical detection limits, soil background concentrations, Ontario Drinking Water Objectives, terrestrial effects-based criteria and human health risk-based criteria.

Generally, the lowest of the human health based effects or ecological effects based number was compared with the highest of the analytical detection limit or soil background number to derive criteria values. Surface soil concentrations for volatile contaminants which may result from off-gassing were checked for compliance with Ontario Ambient Air Quality Criteria.

Public Comment

Almost all submissions supported the expanded list of contaminants and increased flexibility of clean-up options provided by the Guideline. Some commenters indicated the generic approach and criteria are acceptable only if coupled with the option of using a Site Specific Risk Assessment approach, particularly when assumptions made in the development of the generic criteria are inappropriate for a specific site.

Most submissions did not specifically comment on the rationale used for establishing the criteria. Some respondents cited the lack of expertise, while others indicated that it would appear that the rationale was sound. Some submissions indicated that an independent peer

review of the rationale for the criteria and the levels should be undertaken since the MOEE merely adopted the Massachusetts approach. The appropriateness of using criteria from many different jurisdictions and applying them to Ontario was questioned as were the assumptions and the basis for risk assessment used by other jurisdictions. Some commenters indicated that all criteria should be based on risk assessment and there should be harmonization of standards on a federal-provincial basis, possibly through the CCME process. Others criticized the use of risk assessment as a basis for developing criteria and comments centred on the need to discuss the limitations and assumptions inherent in the risk assessment approach as risk assessment was viewed as an "art" requiring professional judgement rather than a pure "science".

General concern was expressed over the mechanism for systematic review, reassessment and updating the rationale and criteria levels and the implications of these changes to proponents.

A number of apparent gaps and inconsistencies relating to specific contaminants or criteria levels were brought to ACES's attention. These included the absence of radionuclide criteria, the lack of an assessment of the potential impacts due to off-site receptors (including ecosystems), consideration of indoor air impacts due to the direct transfer from contaminated soil, and the consideration of the bioaccumulation of organic chemicals and other chemicals in the food chain due to the direct transfer from contaminated soil. These comments are summarized in Appendix 3.

Concerns were expressed over the apparent inconsistency between risk levels for different contaminants.

Some submissions indicated that generally, the criteria are too stringent, particularly where soils are not coarse-textured, which may lead to higher clean-up costs resulting in fewer clean-ups and the increase in the number of orphaned sites. Some submissions questioned the ability of current soil remediation technologies to meet the proposed criteria levels which may lead to "dig and dump" as the only feasible option. A number of submissions suggested that the MOEE should undertake a review of remediation technology to determine the economic and technical feasibility of meeting the generic criteria.

The appropriateness of the relative source contribution factor which was used (i.e., 20%) for intake from water supplies for non-carcinogenic criteria as well as the conservative nature of the vapour transport model which does not take into account depletion of the contamination source were raised as issues of concern. As well, a dilution factor of 10 which was applied to assess the impacts of groundwater on surface was deemed to be overly stringent. The use of arbitrary ceiling concentrations and Method Detection Limits (MDL) as the basis for selected criteria was criticised as being inappropriate given that generic criteria should all be based on risk.

According to at least four submissions, an approach based on site specific factors, such as that presented in the MOEE's Interim Guideline (1989), was thought to be preferable to the proposed generic approach.

ACES's Discussion

ACES generally supports the flexibility provided by the various clean-up options in the generic approach. Recognizing that risk-based data were not always available for all contaminants, ACES felt that the rationale used to develop the majority of the generic criteria was defensible and is consistent with other standard setting activities in Ontario.

ACES acknowledges that the public consultation did not provide a great deal of detailed reviews of the rationale used to derive the criteria or of the specific criteria levels.

While ACES felt that the MOEE should be commended on the number of contaminants presented in the Guideline, ACES was unable to undertake a detailed review of the criteria levels given the general complexity of the process used, the contaminant-specific nature of the derivation of each level and the time constraints inherent in ACES's review. However, ACES supports the basic principles used in the development of the generic criteria which include:

- an approach based on human health effects;
- the incorporation of ecological effects;
- conservative exposure scenario assumptions;
- adoption of data from other jurisdictions;
- consideration of technical feasibility (e.g., MDLs, background values).

ACES also supports the use of the SSRA when conditions, such as the presence of sensitive receptors, or assumptions used in the development of generic criteria, are inappropriate at a specific site.

It is ACES's understanding that the MOEE will be revisiting the issue of the transfer of contamination to indoor air due to contaminated soil and, if required, will be updating contaminant levels based on their review. In numerous discussions with the MOEE concerning specific issues related to the development of the generic criteria, ACES is satisfied that those issues (which have been highlighted in Appendix 3) will be reviewed and, where deemed appropriate, will be incorporated into the final Guideline.

ACES considers that the concerns regarding specific levels that were raised in public submissions require review and rationalization by the MOEE.

ACES recognizes that the rationale and associated criteria levels will be subject to change as new information becomes available, technological advances improve analytical detection limits and when other jurisdictions revise their standards. ACES acknowledges that the Guideline will be an evolving document. Therefore, a mechanism should be established and outlined in

the Guideline to accommodate changes to the Guideline and to address the implications of these changes to proponents (see Section 4.1 Revising and Updating Policies and Criteria).

Recommendations

While ACES generally supports the approach taken to develop the generic criteria, ACES recommends that the MOEE review the many concerns raised in the public submissions and address any relevant omissions, gaps and inconsistencies. ACES suggests that the MOEE not incorporate those criteria values which are undergoing review into the final Guideline until it is satisfied that the proposed level represents the best available data.

ACES recommends that the basis upon which criteria levels were selected be referenced in the Guideline document to provide additional clarity to proponents.

ACES recommends that the rationale and associated criteria levels be part of an ongoing review and change process which should be clearly documented in the Guideline (see Section 4.1 Revising and Updating the Policies and Criteria).

2.5.1 Land Use Designations

ACES's Understanding of the Proposal Under the Guideline

The generic criteria have been developed based on intended use of the site. Three land use categories have been proposed by the MOEE: Agricultural, Residential/Parkland, and Industrial/Commercial. The Agricultural designation only provides for a full depth, potable groundwater clean-up option. Land use designations represent different types of potential exposure and receptor characteristics.

Institutional uses such as schools, day care centres and hospitals are included in the Residential/Parkland category as is any portion of an industrial or commercial operation that includes residential occupancy, day care or playgrounds.

When the future use of a site is not known the Residential/Parkland land use is used in selecting clean-up criteria.

Industrial sites which are not being restored should have measures put in place which restrict public access and ensure that environmental conditions do not degrade. Examples include warning signs, fencing, security and surveillance.

Public Comment

Generally, most respondents supported the use of the three land use designations as it provides flexibility in clean-up while generally considering exposure to contaminants. The land use designation system was criticized by one respondent for separating land into discrete parcels which are not interconnected with adjacent and distant air, land and water and therefore, do not take into account off-site ecosystem impacts.

Concerns were raised regarding the lack of clarity in assigning of land use designations for sites which have mixed uses (e.g., commercial and residential) and for road right-of-ways and utility corridors.

Some respondents indicated that the Residential/Parkland designation should be further refined to take into account different housing types (e.g., single dwelling vs. high rise complexes). Some suggested that the Residential category should not apply to residential developments where commercial activities or parking is at or below grade level.

Several issues were raised with respect to the Industrial/Commercial designation. While a few commenters indicated that the Industrial/Commercial category was too restrictive (and should be separated into two distinct categories or have separate Industrial/Nonpotable criteria which are less stringent), another commenter indicated that maternal occupation exposure should have been considered to derive the generic criteria in order to protect the fetus. As well, a suggestion was made that hospitals should be included in the Industrial/Commercial category.

ACES's Discussion

ACES acknowledges that the application of land use designations may vary according to municipality requirements and felt that clearer definitions of "change in land use" and "site" may provide greater guidance to proponents. For example, if a "dirty" industrial site was being redeveloped for commercial applications, would a clean-up to the Industrial/Commercial criteria be required? ACES also identified the need for consistency between land use designation definitions in the Ministry's proposed Materials Management Policy and the Guideline.

ACES's main concern focussed on the need for flexibility when assigning land use designations to multiple use sites. ACES was particularly concerned that the application of Residential/Parkland criteria to Industrial/Commercial sites with on-site day care would discourage the establishment of workplace day care.

ACES discussed the option of using a limited SSRA for specific areas within a site as a means of providing flexibility where multiple land uses are intended for one site.

Also, ACES considers that the SSRA option provides an avenue for the application of a site specific sensitivity analysis if the proponent deems that the land use designations under the generic approach are not appropriate. For example, a SSRA could be undertaken to accommodate differences in exposure which result from different housing types (single family vs. high rise) within the Residential/Parkland designation.

Recommendations

ACES recommends that the MOEE provide greater clarity for proponents in the application of land use designations and to ensure that land use definitions used in the Ministry's proposed Materials Management Policy are consistent with the Guideline.

ACES recommends that the MOEE provide a streamlined mechanism, such as a limited SSRA, for assigning appropriate land use designation(s) for multiple use sites.

2.5.2 Potable/Nonpotable Groundwater

ACES's Understanding of Proposal Under the Guideline

The MOEE provides criteria for soil and groundwater in the Generic clean-up approach for the restoration of impaired groundwater to potable and nonpotable conditions. The MOEE states that the proposed potable criteria levels are sufficiently protective to ensure that; i) groundwater may be used as a source of drinking water, ii) vapour migration into indoor air does not pose a human health threat, and iii) adjacent surface waters receptors are not adversely affected. Nonpotable groundwater criteria provide protection for vapour migration to indoor air and surface waters receptors.

The use of nonpotable criteria for soil and groundwater is only intended for sites which are served by communal or municipal drinking water supplies and when present or future surface or groundwater sources of drinking water will not be adversely affected (including agricultural uses).

The MOEE proposes in the Guideline that the justification and rationale for using nonpotable criteria will be required when the Notice of Clean-up is presented to the Ministry.

Public Comment

The majority of submissions supported the use of potable and nonpotable groundwater designations citing the need for flexibility in the clean-up approach and less stringent clean-up criteria in areas where groundwater is not likely to be used as a drinking water source.

The main concern that was raised focussed on the definition of nonpotable groundwater and the delineation of nonpotable sites or areas in the province. Some respondents indicated that all groundwater has the potential to be consumed and, therefore, should be restored to potable condition. A number of submissions stated that the movement of groundwater on a site specific basis is not understood well enough, particularly where a number of aquifers may be present at a site, to determine its future use. As well, general concern over the degradation of groundwater was expressed as was the need for consistency between the MOEE's Reasonable Use Policy for groundwater and this Guideline.

Other submissions questioned who would be responsible for deciding whether nonpotable criteria could be applied at a site. Comments were received regarding the appropriateness of applying nonpotable criteria to the Metropolitan Toronto area, given that this groundwater flows to Lake Ontario which is a drinking water supply source. It was suggested that greater clarity in the application of nonpotable criteria should be provided in the Guideline.

A few submissions suggested that the nonpotable generic criteria may be too stringent depending on site conditions and that Site Specific Risk Assessment approach would provide more appropriate levels.

A number of comments recommended that approval by the MOEE should be mandatory prior to clean-up to nonpotable criteria levels and that the MOEE should actively participate in the decision making process or provide additional information to assist proponents in deciding whether nonpotable criteria are appropriate at a specific site.

ACES's Discussion

There was some confusion within ACES surrounding the use of the term "nonpotable criteria" in the Guideline. ACES was unclear at times whether the criteria that were referred to were soil criteria, groundwater criteria or both. ACES suggested that the Guideline explicitly state the type of criteria being referred to.

Generally, ACES supported the flexibility provided by the two groundwater use designations but shared the concerns raised by the public regarding the ability to differentiate between potable and nonpotable groundwater sources, the lack of definition concerning the application of nonpotable criteria, and the potential for further degradation of groundwater resources.

ACES strongly supports all actions aimed at protecting Ontario's groundwater and recognizes the need to prevent further degradation of this resource.

While ACES considers that potable clean-ups should be undertaken whenever possible, ACES acknowledged that in major urban or heavily industrialized areas of the province it may be difficult to determine a single source of contamination, and groundwater conditions may have resulted from many different point and non-point sources. Under these conditions, it may be

unrealistic and impractical to mandate a clean-up to potable criteria and ACES considers that some clean-up is better than no clean-up. It is ACES's understanding that the MOEE will not permit the degradation of groundwater supplies.

ACES agreed that the use of nonpotable criteria was only appropriate and should be restricted to sites where clean-up to nonpotable standards would be an improvement, groundwater quality would not be further impaired and cleaning up to potable criteria levels would be neither technically feasible.

ACES believes that the MOEE should approve all nonpotable clean-ups, prior to clean-up and the public should play a role in deciding the acceptability of designating an area as nonpotable.

Recommendations

ACES recommends that, instead of using the general terms "potable criteria" or "nonpotable criteria", the MOEE state explicitly in all instances whether groundwater criteria or soil criteria are being referred to.

To avoid adversely affecting present and future surface or groundwater sources of drinking water, ACES recommends that the MOEE revise its position to indicate that restoration to nonpotable criteria should only be permitted for major urban areas with a history of industrialization and when the area is served by a municipal drinking water supply and sanitary sewers.

ACES recommends that the application of nonpotable criteria be restricted to those regions designated as nonpotable by the MOEE. ACES recommends that the MOEE designate regions as nonpotable only when all of the following conditions exist:

- the groundwater is currently nonpotable;
- clean-up to nonpotable standards would be an improvement;
- remediation to potable criteria is not technically feasible; and
- the results of a public consultation have deemed this an acceptable option (See 1.5 Public Consultation).

Where a proponent wishes to apply nonpotable criteria to sites outside of the designated regions, ACES recommends that MOEE approval must be received and the public must be consulted prior to clean-up, and the conditions outlined above must apply.

2.5.3 Stratified Depth Clean-up

ACES's Understanding of the Proposal Under the Guideline

In order to provide a more flexible approach to clean-up, the MOEE has proposed a stratified clean-up where some contaminant levels may be higher in subsurface soils, based on the reduced risk to human health from exposure to soils at depth. In the Guideline, stratified clean-ups would require registration on title, which could be withdrawn if a full depth/potable groundwater clean-up was undertaken subsequent to the stratified clean-up.

The cut-off depth for a stratified clean-up which has been proposed by the MOEE is 1.5 metres. Physical and chemical properties of contaminants, environmental fate characteristics, exposure pathways to ecological and human receptors and the potential for migration to groundwater were considered in the selection of this depth. The MOEE felt that 1.5 m was below the main feeding roots of plants.

The MOEE considers the 1.5 m depth to be a minimum (e.g., in the case of settling activities) and if subsurface materials (> 1.5 m) were brought to the surface then additional clean-up would be required.

Public Comment

There was general support for the concept of a stratified clean-up approach. Some commenters questioned the rationale used to derive subsurface numbers when surface and subsurface numbers were identical and whether surface capping to a depth of 1.5 m was an acceptable stratified clean-up option.

The most mentioned concern was the appropriateness of the 1.5 m cut-off depth. It was observed that the 1.5 m cut-off appeared to be rather arbitrary and justification of this depth was lacking in the Guideline. Also, it was noted that other jurisdictions have used less stringent depths for stratified clean-ups.

Some submissions indicated that, depending on site conditions, the 1.5 m may be too stringent or not stringent enough. Questions were raised regarding the effect of rocky terrain, variations in soil conditions, nearness to water table and basements and the impact in subsurface soils of the transfer of volatile compounds through structures and geological formations. Alternate depth suggestions included 0.9 m, 1.0 m, 2.0 m and 2.5 m and approaches which included the use of expanded categories with ranges of clean-up depths depending on soil conditions, type of contaminant and the end use of the site.

ACES's Discussion

In general, ACES supported the use of a stratified clean-up option but questioned whether sensitive receptors (e.g., children) in residential basements would be adequately protected by the 1.5 m cut-off depth.

Given the cost implications, ACES considered that there was a need for greater clarity with respect to the rationale and justification for selecting the 1.5 m depth and noted an inconsistency with respect to the MOEE's proposed Materials Management Policy's accessible depth cut-off of 0.9 m. As well, ACES identified a need for assurance from the MOEE that the transfer of volatiles from contaminated soil to indoor air in residential basements was considered in the development of subsurface soil criteria.

In addition, ACES felt that some guidance should be provided in the Guideline for future owners of sites which have undergone a stratified clean-up when subsurface soils are disturbed or brought to the surface.

Recommendations

ACES recommends that more explanation and justification be provided in the Guideline regarding the basis for the 1.5 m cut-off.

ACES recommends that the MOEE provide more detailed guidance with respect to encountered geological and hydrogeological features in stratified clean-ups.

ACES considers that the 1.5 m cut-off for Industrial/Commercial land use designation may be appropriate, however, due to the need to protect sensitive receptors (i.e., children) in residential basements, ACES recommends that the MOEE consider the implementation of a more stringent depth (e.g., 2 m) for Residential/Parkland stratified clean-ups.

ACES further recommends that the MOEE provide assurance that the proposed soil levels for volatile contaminants will adequately protect indoor air in residential basement structures.

ACES recommends that the MOEE review the proposed Materials Management Policy to resolve any inconsistencies with respect to accessible depth.

ACES recommends that the MOEE investigate methods to provide more guidance to future owners regarding what to do and the consequences if sub-surface materials which have undergone a stratified clean-up are disturbed.

2.6 Site Specific Risk Assessment and Risk Management

ACES's Understanding of the Proposal Under the Guideline

The MOEE proposes that Site Specific Risk Assessment (SSRA) may be used in the following applications: to assess sensitive sites and develop more protective criteria than generic; to develop new generic criteria where they do not exist; to develop site specific criteria in lieu of generic criteria; or to be used in conjunction with risk management/site management plan. Proponents can apply less stringent criteria than the generic criteria if they conduct a SSRA providing the environment is not permitted to degrade further.

The Ministry has placed conditions on the use of SSRA for cases of its use to develop site specific criteria and site management plans. These include peer review of the clean-up plan by qualified independent reviewers, municipal concurrence, a community based public consultation program to ensure public awareness and participation in the SSRA and the filing of a risk management plan which outlines future monitoring and control measures on the site. Registration on land title is proposed under these circumstances.

The process of risk assessment and risk management are potentially lengthier than that of utilizing generic criteria and should include both human health and ecological protection aspects.

Public Comment

There was a great deal of support for SSRA as a clean-up option. Many respondents indicated that it provided essential flexibility and an avenue for substantial cost savings.

There were however, several respondents who were concerned about the SSRA option. Some felt that it was open to abuse; others felt that there was a need for close supervision by the MOEE. Some were concerned that a lesser level of protection would be provided under this approach.

Many respondents raised concerns about the onerous requirements attached to the SSRA. Some felt that the public consultation requirements were too costly for smaller properties. Others raised concerns about the peer review process; some felt it should be replaced by closer Ministry approval; others raised concerns about the costs it introduced; others indicated that it would be difficult to ensure that peer review is conducted in an independent and unbiased way. Several respondents expressed the need for clarification in the qualifications, role and process to be applied to the peer review.

Concerns were also expressed about the need for municipal concurrence. Some felt that this was an onerous obligation; that it would be costly to educate municipal contacts.

At least two respondents raised the need for "class risk assessments" - one for utility corridors, the other for gasoline stations. In both instances, it was argued that the SSRA requirements were unnecessarily onerous for organizations dealing with similar contaminants on multiple sites.

ACES's Discussion

Generic criteria are based on assumptions which ensure protection in most instances. If a specific site has characteristics that vary from those assumptions, a SSRA allows a proponent to vary criteria where justified. This provides much needed flexibility in the clean-up process.

However, SSRA makes it harder for the public and future owners to know if the remediation has been done properly. It utilizes fairly sophisticated scientific tools and professional value judgements, therefore the Ministry must be vigilant in its supervision of SSRA. The MOEE has indicated to ACES that it will review and approve SSRA plans prior to their implementation.

There is a greater need for the MOEE to play a strong role in ensuring the quality and fairness of SSRAs than in any other component of the Guideline due to the potential for misuse and abuse. However, ACES found the MOEE's supporting document on Risk Assessment was lacking in sufficient detail to provide guidance to the proponent.

The requirement for peer review of the SSRA plan could provide some degree of assurance that the approach and professional judgement used in the SSRA are reasonable if the peer review is supervised properly. Peer reviewers must be independent for their review to be worthwhile. The MOEE should play a role in ensuring the independence and qualifications of the peer reviewer. Currently, the Proposed Guideline provides very little guidance regarding the credentials for reviewer, the role of the reviewer, the extent of peer review and how the peer reviewers' comments are addressed.

The possibility exists that SSRA could include the use of risk management solutions such as the placement of an impermeable membrane topped with soil. This option, which will leave the contaminants on site, needs to be coupled with a good ecological risk assessment.

ACES supports the option of SSRA because it allows the latitude and flexibility needed in clean-ups, but only on the condition that this latitude is not at the expense of acceptable environmental and human health protection.

It is ACES's understanding that the MOEE will be providing reviews and approvals of SSRA plans prior to their implementation. In keeping with this, ACES supports the SSRA option only if the acceptable level of risk is consistent with that provided by the generic criteria. When using SSRA to develop generic criteria when none exist, the level of acceptable risk and

exposure assumptions should be consistent with those used in the Guideline to develop the generic criteria.

Recommendations

ACES recommends that the MOEE review and approve SSRA plans prior to the clean-up, to ensure public confidence in the SSRA process and to provide adequate guidance to proponents.

In addition, in cases in which site specific criteria are being developed or risk management measures are proposed, ACES recommends that the MOEE monitor, approve and oversee the peer review process.

ACES supports the SSRA approach provided that the level of acceptable risk not change from that used to derive the generic criteria for each contaminant.

ACES further recommends that the Guideline clarify the differences between the SSRA process required for sensitive sites, new generic criteria development, site specific criteria development and risk management.

ACES recommends that the MOEE's Risk Assessment document and the Proposed Guideline be revised to contain greater detail regarding:

- 1) Qualifications of practitioners;
- 2) Methodology of a risk assessment;
- 3) Qualifications of peer reviewers and direction for completing a peer review;
- 4) Clearer guidance regarding the extent and timing of public involvement; and
- 5) The requirement for municipal concurrence and the role of the MOEE.

Due to the substantial benefit that SSRA may represent to proponents and the resource intensive nature that SSRA review may represent for the MOEE, ACES recommends that the MOEE consider providing the SSRA review on a cost recovery basis, except in cases of sensitive sites and the lack of generic criteria.

ACES further recommends that "risk management" be clarified, that options under risk management be outlined in more detail and that choosing risk management be tied to the completion of an ecological risk assessment (ERA). The guidelines for conducting an ERA should stress the need for quantitative results, which will facilitate integration with human risk assessment and will also be useful in the development of new generic criteria.

In cases where the risk management option is chosen, ACES recommends that the MOEE oversee the implementation of the plan and assure that the responsibilities of the various parties for future monitoring of such a site are specified, including a schedule of events.

ACES recommends that the MOEE study the option of a "class risk assessment" for similar types of small sites that are routinely decommissioned. ACES further recommends that the class SSRA be developed with the appropriate public consultation in order to have public input into the designation of the class SSRA. In addition, the Guideline should specify the level of public consultation and municipal concurrence required when a site utilizing a class SSRA designation is cleaned up.

3. Other Issues

A number of related issues not addressed in the preceding discussion were raised by public submissions. These issues were not discussed in detail by ACES and some are being highlighted in this section for the MOEE's attention. A complete list of "Other Issues" appears in Appendix 3.

Economic Instruments:

Some submissions indicated that economic instruments such as a fee or surcharge for clean-ups which exceed background levels would provide an economic incentive to clean up to the lowest possible levels. It was suggested that the fees collected could be placed in a fund and used to clean up orphaned sites in the province.

ACES considers that further study and consideration of the use of economic instruments which could be used in implementing the Guideline is warranted.

On-Site Remediation:

The Guideline was criticised by some respondents for not encouraging on-site remediation. It was argued that generic criteria are too stringent; that they could not be achieved with current remediation technologies. Several comments indicated that there was a need for the MOEE to maintain up-to-date information on soil remediation technologies and to provide technical information to the public upon request.

ACES considers that the Guideline should encourage on-site remediation, whenever possible, and should discourage "dig and dump" clean-ups. Also, ACES considers that the MOEE has a role to play in the dissemination of current information on remediation technologies.

Community Health:

Some commenters suggested that human health should be the primary consideration in clean-ups and that indicators of community health (human and ecological) prior to and after clean-up would be useful as a means of monitoring improvements to the health of the community.

ACES believes that human health should be the primary criterion for setting priorities for clean-ups and considers that community health profiles may provide valuable information in assessing the effectiveness of clean-up activities.

4. Implementation

4.1 Revising and Updating Policies and Criteria

ACES's Understanding of the Proposal Under the Guideline

The Proposed Guideline gives no information on how the policies and criteria levels will be updated.

Public Comment

A number of submissions questioned how the policies and criteria levels were going to be updated. The need for a mechanism to update the Guideline and its documentation was cited.

ACES's Discussion

ACES recognizes that the policies and criteria levels contained in the Guideline are continually evolving and that a mechanism for revising them is required and should be contained in the Guideline. For example, the development of the generic approach and criteria is based on the best available science which is subject to change as more information becomes available on contaminants, socio-economic impacts are assessed, technological advances provide lower detection limits and human health and ecologically-based effects are confirmed. Inherent in the generic approach is the substitution of effects-based criteria levels from other agencies and jurisdictions, which may be subject to change and are beyond the MOEE's jurisdictional control. In addition, the provincial and federal-provincial regulatory framework in which the Guideline is set, may be revised periodically.

ACES considered that advice from the MOEE should be readily accessible to the public during the initial phases of implementation of the Guideline, given the proposed reduced role of the MOEE in approving clean-ups, and that feedback from stakeholders is critical to the overall success in the Guideline's implementation.

During the transition period to using the Proposed Guideline, ACES has identified a need for ongoing updates to users of the Guideline which could include the provision of a news bulletin, a dedicated Province-wide toll-free line, and notification on the Environmental Bill of Rights registry.

ACES considers that major updates of the Guideline will also be required for changes in process and policy issues, sampling and analytical methodologies, and standards and scientific rationale. ACES remains unclear as to how clean-ups which are currently underway will be dealt with during the transition to the Proposed Guideline.

Recommendations

ACES recommends that the MOEE explicitly describe in the Guideline how clean-ups which have been completed, or are in the process of being completed according to the existing Guidelines, should be addressed. The Guideline should also explicitly describe the timeline for its implementation.

ACES recommends that the MOEE establish mechanisms for updating the Guideline and that these mechanisms be clearly documented in the Guideline.

ACES recommends that during the initial phases of implementation, the MOEE frequently issue newsletters or bulletins to clients, and provide notices of changes on the EBR registry. ACES further recommends that the MOEE establish a one-window approach to information exchange with the public, perhaps through the establishment of a dedicated Province-wide toll-free line which will provide information on the Guideline to the public, and document and monitor issues of concern from the public and from specific client groups.

ACES recommends that the MOEE work closely with major stakeholders, including other government agencies, to update policies and criteria levels as new information comes to light. ACES recommends that all changes be subjected to review through the Environmental Bill of Rights process or through ACES.

4.2 Linkages with Materials Management Policy and Other Regulations/Policies

ACES's Understanding of the Proposal Under the Guideline

A list of related legislation and regulations is provided as an Appendix in the Proposed Guideline.

The Guideline does not mention the linkages between the MOEE's proposed Materials Management Policy and the Guideline. However, the MOEE states in the Background document which was supplied as part of the consultation materials that linkages between the proposed Materials Management Policy and the Proposed Guideline "will be aligned".

As well, there is no discussion of the implications of the Proposed Guideline on the Ministry of Consumer and Commercial Relations' *Gasoline Handling Act* or the Ministry of Municipal Affairs *Planning Act*.

Public Comment

A few public submissions have identified the need for a clear integration of the proposed MMP and the Guideline. Differences in the definition of accessible depth and inconsistencies in criteria levels between the two documents have been cited as evidence for the need for the rationalization of the two proposed policies.

Some respondents questioned whether the Proposed Guideline would replace the Interim Guideline which is currently referenced under the *Gasoline Handling Act*.

A few submissions questioned the linkages of the Guideline to the *Planning Act* and suggested the public consultation activities under the Guideline might best be undertaken under the provisions in the *Planning Act*.

ACES's Discussion

During its review of the proposed Materials Management Policy, ACES recommended that the "new decommissioning guidelines being developed must be consistent with" the Materials Management Policy. While ACES recognizes that the MMP was developed as a pollution prevention tool rather than a clean-up strategy, ACES is concerned that apparent inconsistencies between the Guideline and the MMP. In addition, ACES is concerned that the Materials Management Policy is not referenced or discussed in the Guideline when the two policies are inter-related.

ACES did not undertake a detailed review of the *Gasoline Handling Act* as it relates to the Guideline but considers that the MOEE should initiate discussions with the Ministry of Consumer and Commercial Relations (MCCR) to resolve any outstanding issues with respect to the implementation of the Guideline.

Linkages with the provincial *Planning Act* are discussed in Section 1.6 Municipalities.

Recommendations

ACES recommends that the MOEE examine its proposed Materials Management Policy in light of the Proposed Guideline and ensure that the final Policy be consistent with the Guideline (e.g., definition of accessible depth, rationalization of contaminant levels being brought on to a site versus those which remain on-site and are in compliance with the Guideline).

In addition, ACES recommends that the proposed Materials Management Policy be explicitly referenced in the Guideline and that the areas of potential overlap be outlined.

ACES recommends that the MOEE consult with the MCCR to determine how the Guideline will be used under the *Gasoline Handling Act*.

Summary of Recommendations

ACES recommends the following principles:

- i) Where the Guideline is to function without Ministry involvement or interpretation, it should be sufficiently precise and detailed to provide adequate direction to those responsible for application to individual clean-ups.**
- ii) The Ministry should provide on-going interpretation of the Guideline where ambiguities exist or arise concerning general application of the Guideline to all sites.**
- iii) Where the Guideline is insufficiently precise and detailed for application to individual clean-ups, the Ministry should either elaborate in the Guideline or provide interpretation and advice on what action is appropriate. The Ministry should review and approve all plans for SSRA.**
- iv) The Ministry should monitor the third party certification method adopted to ensure that it functions to provide assurance of site clean-up quality (for further discussion, please refer to Section 1.3 Certification of the Notice of Clean-up).**

In light of the concerns raised regarding assurance, the Ministry should closely monitor the new system, in order to evaluate its effectiveness, with a view to recommending regulatory change, and more direct Ministry involvement, if warranted (for further discussion, please refer to Section 4.1 Revising and Updating Policies and Criteria).

ACES recommends that the MOEE change the wording of the Notice of Clean-up in light of the public comment received, the MOEE's proposed role regarding approval of Site Specific Risk Assessment plans and ACES's recommendations regarding registration on land title and the certification of the Notice (see Section 1.3 Certification of the Notice of Clean-up and Section 1.4 Title Registration, respectively).

ACES does not agree with the MOEE's proposal that only Professional Engineers and professions with comparable self-regulation be permitted to certify the Notice of Clean-up. ACES recommends that accreditation be the criterion used to determine which practitioners are permitted to make the certification in the Notice of Clean-up.

ACES further recommends that MOEE facilitate the formation of an inclusive certifying body for these practitioners.

In the interim, ACES recommends that the MOEE develop criteria for acceptable qualifications required for individuals to certify the Notice of Clean-up or continue to provide review and approval of individual site clean-up plans.

ACES supports the principles of full disclosure as to the environmental condition of a property to individuals with an interest in that property, however ACES does not agree with registration on land title as proposed in the Guideline.

Instead, ACES recommends that the MOEE create a publicly accessible data base of documents and information concerning site assessments and clean-ups undertaken under this Guideline. The owner of the property would be required to place the documents in the registry where a clean-up had occurred. In addition, the owner could voluntarily have documents added to the data base including those where no clean-up is required, for example a properly certified Phase 1 Environmental Site Assessment document indicating no need for a clean-up. ACES believes this solution will address concerns regarding future access to reports.

ACES recommends that the MOEE undertake a public education campaign to publicize the existence of a registry (see further recommendations in Section 1.5 Public Consultation, Section 1.7 Economic Concerns and Section 4.0 Implementation).

ACES recommends that the registry referred to under Section 1.4 Title Registration be publicly accessible.

ACES recommends that the Ministry should expand the Public Consultation section of the Proposed Guideline to clarify the circumstances in which the public should be involved, giving consideration to:

- the type and extent of contamination;
- the potential for negative impact to neighbours, the community, and/or the environment;
- the nature of the site (e.g., a sensitive site);
- the site clean-up strategy and criteria being applied (e.g., stratified non-potable, long-term risk management);
- the step in the site assessment/clean-up process.

For the various circumstances identified, the Guideline should provide more direction as to:

- a) the desired objectives of public involvement (e.g., to elicit historical information, to mitigate the negative impacts associated with clean-up, etc.);
- b) the role of the public (e.g., to be notified, to be consulted, to participate in decision making);
- c) the methods that should be applied (e.g., by meetings, newspapers, neighbourhood notices etc.);
- d) the timing of the public consultation;
- e) the role of the Ministry.

ACES recommends that the Ministry should conduct a broad based public consultation when it designates those regions of the province to which the nonpotable groundwater criteria can apply (see Section 2.5.2 Potable/Nonpotable Groundwater).

ACES recommends that the Guideline specify that public consultation must be conducted by the proponent whenever he/she applies for the application of non-potable groundwater criteria outside of the areas designated by the Ministry.

For Site Specific Risk Assessments (SSRAs) directed towards the development of site specific criteria which may be less stringent than existing generic criteria and/or towards the development of a risk/site management plan, ACES recommends that the Ministry review and approve the consultation plan as part of its review and approval of the SSRA.

ACES recommends that the Guideline's public consultation requirements should be developed to avoid duplication with, and to take advantage of the provisions of, the public consultation requirements in the Environmental Bill of Rights, the *Planning Act* and the *Environmental Protection Act*. The Guideline should indicate what those other requirements are and when and where they apply.

In addition, ACES recommends that the MOEE monitor the public consultation provisions of the Guideline over time and revise them as appropriate.

ACES recommends that where generic or background criteria are being applied, and there is the potential for negative off-site impacts to occur during the actual clean-up, the public should be consulted on the mode of clean-up.

ACES recommends that the MOEE provide on-going technical and scientific support to municipalities as required by them to fulfil their mandate under the Guideline.

With regard to the role of municipalities in SSRA, ACES recommends:

- 1) that municipalities only be required to concur with the use of Site Specific Risk Assessments in cases where site specific criteria are being used in lieu of generic criteria or where risk management/site management plans are being used;
- 2) that the Guideline be clarified to indicate what is meant by municipal concurrence;
- 3) that the Guideline clarify that municipal concurrence with the use of a Site Specific Risk Assessment does not mean that the municipality is the review and approval authority, which responsibility should be undertaken by the MOEE.

ACES recommends that the Ministry should establish a process or system to monitor carefully the socio-economic impacts of this Guideline in the coming years with the goal of making adjustments and revisions when necessary.

ACES recommends that the Ministry intensify its efforts to resolve the uncertainties around the legal liability issues which surround site clean-up.

ACES recommends that the MOEE recognize that Phase 1 ESA must be done at the level of practice of the Canadian Standard Association standard or equivalent.

ACES further recommends that, due to the crucial role that Phase 1 ESA plays in site assessment and clean-up as a decision point as to whether or not any further action is required, the MOEE require that all Phase 1 ESAs be performed by certified site assessors.

In order to provide the necessary guidance to field practitioners and to avoid duplication of effort, ACES recommends that the MOEE prepare a document which serves as an interface between the Guideline and other existing sampling and analysis documents, such as the CCME manual.

ACES recommends that the MOEE review comments and concerns raised in public submissions and ACES's review and address any relevant omissions, gaps or inconsistencies.

To provide greater clarity and guidance in the Guideline document, ACES recommends that linkages be identified and cross-referenced to the interface or sampling and analysis reference document in the Guideline.

ACES recommends that the MOEE provide guidance to proponents on whether generic criteria are adequately protective for areas determined to be sensitive sites under the first criterion (ecological sensitivity).

In order to determine whether there is a sensitive site based on ecological sensitivity, ACES recommends that owners and their consultants be required to consult with the local municipality, the Ministry of Natural Resources and the Conservation Authority.

ACES further recommends that the definition of a sensitive site be expanded to coordinate with provisions of the *Planning Act* and other agencies' definitions of sites which would meet the general description.

ACES recommends that the Guideline clarify that identification of sensitive sites occurs at Step 2 of the process outlined in the Guideline.

In addition, ACES recommends that the Guideline be amended to clarify the definition and identification of sensitive sites based on dilution factors of ground to surface water discharge.

ACES recommends that the MOEE develop generic criteria for use in the areas of the province with soil pH less than five for inorganic parameters to eliminate the need to undertake limited Site Specific Risk Assessment in those cases, and that until such criteria are available, that the MOEE use a streamlined process for limited Site Specific Risk Assessments in these cases.

ACES recommends that the MOEE adopt the proposed clean-up approaches, including the use of SSRA, in the final Guideline.

While ACES generally supports the approach taken to develop the generic criteria, ACES recommends that the MOEE review the many concerns raised in the public submissions and address any relevant omissions, gaps and inconsistencies. ACES suggests that the MOEE not incorporate those criteria values which are undergoing review into the final Guideline until it is satisfied that the proposed level represents the best available data.

ACES recommends that the basis upon which criteria levels were selected be referenced in the Guideline document to provide additional clarity to proponents.

ACES recommends that the rationale and associated criteria levels be part of an ongoing review and change process which should be clearly documented in the Guideline (see Section 4.1 Revising and Updating the Policies and Criteria).

ACES recommends that the MOEE provide greater clarity for proponents in the application of land use designations and to ensure that land use definitions used in the Ministry's proposed Materials Management Policy are consistent with the Guideline.

ACES recommends that the MOEE provide a streamlined mechanism, such as a limited SSRA, for assigning appropriate land use designation(s) for multiple use sites.

ACES recommends that, instead of using the general terms "potable criteria" or "nonpotable criteria", the MOEE state explicitly in all instances whether groundwater criteria or soil criteria are being referred to.

To avoid adversely affecting present and future surface or groundwater sources of drinking water, ACES recommends that the MOEE revise its position to indicate that restoration to nonpotable criteria should only be permitted for major urban areas with a history of industrialization and when the area is served by a municipal drinking water supply and sanitary sewers.

ACES recommends that the application of nonpotable criteria be restricted to those regions designated as nonpotable by the MOEE. ACES recommends that the MOEE designate regions as nonpotable only when all of the following conditions exist:

- the groundwater is currently nonpotable;
- clean-up to nonpotable standards would be an improvement;

- remediation to potable criteria is not technically feasible; and
- the results of a public consultation have deemed this an acceptable option (See 1.5 Public Consultation).

Where a proponent wishes to apply non-potable criteria to sites outside of the designated regions, ACES recommends that MOEE approval must be received and the public must be consulted prior to clean-up, and the conditions outlined above must apply.

ACES recommends that more explanation and justification be provided in the Guideline regarding the basis for the 1.5 m cut-off.

ACES recommends that the MOEE provide more detailed guidance with respect to encountered geological and hydrogeological features in stratified clean-ups.

ACES considers that the 1.5 m cut-off for Industrial/Commercial land use designation may be appropriate, however, due to the need to protect sensitive receptors (i.e., children) in residential basements, ACES recommends that the MOEE consider the implementation of a more stringent depth (e.g., 2 m) for Residential/Parkland stratified clean-ups.

ACES further recommends that the MOEE provide assurance that the proposed soil levels for volatile contaminants will adequately protect indoor air in residential basement structures.

ACES recommends that the MOEE review the proposed Materials Management Policy to resolve any inconsistencies with respect to accessible depth.

ACES recommends that the MOEE investigate methods to provide more guidance to future owners regarding what to do and the consequences if sub-surface materials which have undergone a stratified clean-up are disturbed.

ACES recommends that the MOEE review and approve SSRA plans prior to the clean-up, to ensure public confidence in the SSRA process and to provide adequate guidance to proponents.

In addition, in cases in which site specific criteria are being developed or risk management measures are proposed, ACES recommends that the MOEE monitor, approve and oversee the peer review process.

ACES supports the SSRA approach provided that the level of acceptable risk not change from that used to derive the generic criteria for each contaminant.

ACES further recommends that the Guideline clarify the differences between the SSRA process required for sensitive sites, new generic criteria development, site specific criteria development and risk management.

ACES recommends that the MOEE's Risk Assessment document and the Proposed Guideline be revised to contain greater detail regarding:

- 1) Qualifications of practitioners;
- 2) Methodology of a risk assessment;
- 3) Qualifications of peer reviewers and direction for completing a peer review;
- 4) Clearer guidance regarding the extent and timing of public involvement; and
- 5) The requirement for municipal concurrence and the role of the MOEE.

Due to the substantial benefit that SSRA may represent to proponents and the resource intensive nature that SSRA review may represent for the MOEE, ACES recommends that the MOEE consider providing the SSRA review on a cost recovery basis, except in cases of sensitive sites and the lack of generic criteria.

ACES further recommends that "risk management" be clarified, that options under risk management be outlined in more detail and that choosing risk management be tied to the completion of an ecological risk assessment (ERA). The guidelines for conducting an ERA should stress the need for quantitative results, which will facilitate integration with human risk assessment and will also be useful in the development of new generic criteria.

In cases where the risk management option is chosen, ACES recommends that the MOEE oversee the implementation of the plan and assure that the responsibilities of the various parties for future monitoring of such a site are specified, including a schedule of events.

ACES recommends that the MOEE study the option of a "class risk assessment" for similar types of small sites that are routinely decommissioned. ACES further recommends that the class SSRA be developed with the appropriate public consultation in order to have public input into the designation of the class SSRA. In addition, the Guideline should specify the level of public consultation and municipal concurrence required when a site utilizing a class SSRA designation is cleaned up.

ACES recommends that the MOEE explicitly describe in the Guideline how clean-ups which have been completed, or are in the process of being completed, according to the existing Guidelines should be addressed. The Guideline should also explicitly describe the timeline for its implementation.

ACES recommends that the MOEE establish mechanisms for updating the Guideline and that these mechanisms be clearly documented in the Guideline.

ACES recommends that during the initial phases of implementation, the MOEE frequently issue newsletters or bulletins to clients, and provide notices of changes on the EBR registry. ACES further recommends that the MOEE establish a one-window approach to information exchange with the public, perhaps through the establishment of a dedicated Province-wide toll-free line which will provide information on the Guideline to the public, and document and monitor issues of concern from the public and from specific client groups.

ACES recommends that the MOEE work closely with major stakeholders, including other government agencies, to update policies and criteria levels as new information comes to light. ACES recommends that all changes be subjected to review through the Environmental Bill of Rights process or through ACES.

ACES recommends that the MOEE examine its proposed Materials Management Policy in light of the Proposed Guideline and ensure that the final Policy be consistent with the Guideline (e.g., definition of accessible depth, rationalization of contaminant levels being brought on to a site versus those which remain on-site and are in compliance with the Guideline).

In addition, ACES recommends that the proposed Materials Management Policy be explicitly referenced in the Guideline and that the areas of potential overlap be outlined.

ACES recommends that the MOEE consult with the MCCR to determine how the Guideline will be used under the *Gasoline Handling Act*.

SITE ASSESSMENT AND CLEAN-UP

The Honourable Bud Wildman, Minister of the Environment and Energy, has asked the Advisory Committee on Environmental Standards (ACES) to conduct a public consultation and make recommendations on his Ministry's proposed Guideline for the Clean-up of Contaminated Sites in Ontario and supporting documents.

ACES is an independent advisory body responsible for recommending to the Minister sound, practical standards for environmental contaminants, as well as policies, principles and procedures for setting environmental standards.

We are writing to ask for your comments on this proposed Guideline. If you are concerned about the environment and would like to make a difference, we urge you to get involved in this review.

ACES will be holding information sessions in Hamilton on August 11, at the Hamilton Public Library, Main Branch at 2:00 pm and 7:00 pm and in Toronto on August 16, at the MacDonald Block (Ontario South Room), Queen's Park at 2:00 pm and 7:00 pm at which we will explain our public consultation process. We have invited Ministry of the Environment and Energy (MOEE) staff to answer your questions about the development of the Guideline. If you cannot attend one of these meetings and wish more information, a record of the sessions can be ordered. The enclosed materials provide important information regarding the consultation program.

Upon request, ACES will schedule deputation meetings later in August and September to provide you with an opportunity to make an oral presentation in support of your written comments. Please complete the Deputation Meeting section of the enclosed order form, if you are interested in making an oral presentation to ACES.

This consultation will extend for 90 days. Written comments will be accepted by ACES at any time during this period. Due to the tight time constraints of this consultation, we urge you to submit your comments or flag significant issues of concern as early as possible. These may be followed up by additional comments within the consultation period.

We would appreciate it if you would advise others who might have an interest in this issue of this consultation.

The deadline for written comments is October 11, 1994.

For further information and copies of the documentation, please contact:
Advisory Committee on Environmental Standards
40 St. Clair Ave. W., Suite 401
Toronto, Ontario, M4V 1M2

Telephone: (416) 314-9265 Fax: (416) 314-9270

Disponible en français sur demande.

SUPPORTING DOCUMENTATION

The following support documents are available for review at the ACES library and at any Ministry of the Environment and Energy Regional and District Office. (See the reverse side for addresses). Copies may also be ordered in print form or on 3.5 " diskette (WP 5.1) from the ACES Office.

1. ***Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Clean-up of Contaminated Sites. Part 1: Discussion.*** Prepared by the Criteria Development Sub-group of the Criteria Development, Site Assessment and Gateways Work Group, Ontario Ministry of the Environment and Energy, May 1994. (pp. 96)
2. ***Guidance on Sampling and Analytical Methods for Site Clean-ups in Ontario.*** Prepared by the Ontario Ministry of the Environment and Energy, May 1994. (pp. 137)
3. ***Guidance on the Use of Risk Assessments in Site Clean-ups in Ontario.*** Prepared by the Standards Development Branch, Ontario Ministry of the Environment and Energy, May 1994. (pp. 14)

The following support documents are available for review only:

1. ***Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Clean-up of Contaminated Sites. Part 2: Appendices.*** Prepared by the Criteria Development Sub-group of the Criteria Development, Site Assessment and Gateways Work Group, Ontario Ministry of the Environment and Energy, May 1994.
2. ***Economic Assessment of Cases Studies Based on Proposed Ministry Clean-Up Guidelines.*** Prepared by the Economic Services Branch, March 1994.

ACES Library:

Advisory Committee on
Environmental Standards
40 St. Clair Ave W
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**Ministry of the Environment and Energy
Offices:**

Central Region
Ministry of the Environment & Energy
7 Overlea Blvd., 4th Floor
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Barrie District Office
Ministry of the Environment & Energy
12 Fairview Road
Barrie Ontario
L4N 4P3

Southeast Region
Ministry of the Environment & Energy
133 Dalton Avenue, Box 820
Kingston, Ontario
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Cambridge District Office
Ministry of the Environment & Energy
320 Pinebush Road
P.O. Box 219
Cambridge, Ontario
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Cornwall District Office
Ministry of the Environment & Energy
205 Amelia Street
Cornwall, Ontario
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Southwest Region
Ministry of the Environment & Energy
985 Adelaide St. South
London, Ontario
N6E 1V3

Halton-Peel District Office
Ministry of the Environment & Energy
Suite 401 1235 Trafalgar Road
Oakville, Ontario
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Hamilton District Office
Ministry of the Environment & Energy
9th Floor 119 King Street West
Box 2112
Hamilton, Ontario
L8N 3Z9

West Central Region
Ministry of the Environment & Energy
119 King St. West
P.O. Box 2112, 12th Floor
Hamilton, Ontario
L8N 3Z9

Kenora District Office
Ministry of the Environment & Energy
P.O. Box 5150, 808 Robertson Street
Kenora, Ontario
P9N 1X9

Kingston District Office
Ministry of the Environment & Energy
133 Dalton Avenue
P.O. Box 820
Kingston, Ontario
K7L 4X6

Muskoka Haliburton District Office
Ministry of the Environment & Energy
483 Bethune Drive
Gravenhurst, Ontario
P0C 1G0

North Bay District Office
Ministry of the Environment & Energy
Northgate Plaza 1500 Fisher Street
North Bay, Ontario
P1B 2H3

Ottawa District Office
Ministry of the Environment & Energy
2435 Holly Lane
Ottawa, Ontario
K1V 7P2

Owen Sound District Office
Ministry of the Environment & Energy
1180-20th Street
Owen Sound, Ontario
N4K 6H6

Peterborough District Office
Ministry of the Environment & Energy
139 George Street North
Peterborough, Ontario
K9J 3G6

Northeast Region
Ministry of the Environment & Energy
199 Larch St., 11th Floor
Sudbury, Ontario
P3E 5P9

Sarnia District Office
Ministry of the Environment & Energy
Suite 109 265 Front Street North
Sarnia, Ontario
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Sault Ste Marie District Office
Ministry of the Environment & Energy
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Sault Ste Marie, Ontario
P6A 2J9

Sudbury District Office
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11th Floor, 199 Larch Street
Sudbury, Ontario
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Thunder Bay District Office
Ministry of the Environment & Energy
435 James Street South
Suite 331, 3rd Floor
Thunder Bay, Ontario
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83 Algonquin Blvd West
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Toronto, Ontario
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435 James St. South, 3rd Floor
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Welland District Office
Ministry of the Environment & Energy
637 Niagara Street North
Welland, Ontario
L3C 1L9

Windsor District Office
Ministry of the Environment & Energy
6th Floor, 250 Windsor Avenue
Windsor, Ontario
N9A 6V9

York Durham District Office
Ministry of the Environment & Energy
4th Floor, 7 Overlea Blvd.,
Toronto, Ontario
M4H 1A8

CONSULTATION QUESTIONS

ACES is particularly interested in the answers to the following questions, although we welcome any additional comments you may have:

1. Is the proposed role of the Ministry appropriate?
2. Is the mechanism for accountability, enforcement and liability adequate?
Specifically:
 - i) Are the provisions for the Notice of Clean-up to MOEE and subsequent acknowledgement by MOEE adequate?
 - ii) Is the proposed title registration following site clean-up appropriate?
 - iii) Is it appropriate to require certification of final reports and "Notice of Clean-up" documents by Professional Engineers?
3. Can the proposed guideline be practically applied to communities/companies of all sizes?
4. Is the process as outlined clear and understandable in providing guidance to proponents and consultants?
5. Do you agree with the overall framework of the three different clean-up approaches, i.e., background, generic and site-specific risk assessment?
6. With respect to the generic approach, do you agree with:
 - i) the use of stratified clean-up?
 - ii) the 1.5 m cut-off?
 - iii) the use of potable and non-potable groundwater protection?
 - iv) the land use designation?
7. Is the rationale used to derive the generic clean-up criteria appropriate, and have the criteria levels been appropriately selected? Are there any that cause you specific concern?
8. Do you agree with the options of allowing site-specific risk assessment or risk management in lieu of using generic criteria?
9. With respect to site-specific risk assessment and risk management, do you agree with:
 - i) the conditions re: public consultation?
 - ii) the conditions re: long term site management?
10. Do you agree with the approach regarding sensitive sites? Is the definition clear and complete?

ORDER FORM

_____ Please send me the MOEE *Proposed Guideline for the Clean-up of Contaminated Sites in Ontario*.

_____ Please send me a record of the information meeting.

_____ Please send a copy of the *Annual Report of the Advisory Committee on Environmental Standards June 1992-June 1993*.

_____ Please send a copy of the ACES brochure 1. *What is ACES?*
_____ and/or 2. *Public Consultation and ACES*
_____ and/or 3. *Glossary of Terms*
_____ and/or 4. *The Multimedia Approach*.

DEPUTATION MEETING

If demand warrants, ACES will organize meetings so that people can make oral presentations outlining their comments on the MOEE documents. If you are interested in making a presentation to ACES, please return this form by August 15, 1994. /

_____ I am interested in making a brief oral presentation to ACES in support of my written comments.

The focus of my presentation will be _____

I will be making my presentation in: _____ English _____ French.

Name/Title _____

Organization _____

Address _____

Postal Code _____

Telephone # (____) _____ - _____ Fax # (____) _____ - _____

E-Mail Address _____

Mail this form to:

Advisory Committee on Environmental Standards
40 St. Clair Avenue West, Suite 401
Toronto, Ontario
M4V 1M2 or fax to: (416) 314-9270

Proposed New Guidelines for the Cleanup of Contaminated Sites in Ontario

The Ministry of Environment and Energy (MOEE) has prepared a document – *Guideline For the Cleanup of Contaminated Sites in Ontario* – that proposes new approaches on how sites in Ontario should be assessed for contamination and cleaned up. This proposed guideline is intended to replace the 1989 MOEE *Guidelines for the Decommissioning and Cleanup of Sites in Ontario* and the 1993 MOEE *Interim Guidelines for the Assessment and Management of Petroleum Contaminated Sites in Ontario*. Three other documents have also been drafted for public review and comment that provide supporting guidance and rationale in carrying out activities under the proposed guideline.

Environment and Energy Minister Bud Wildman has asked the Advisory Committee on Environmental Standards (ACES) to review the proposed guideline and companion documents and obtain public comment on them. This background document has been developed as a general introduction to the proposed new guideline.

THE NEED FOR CHANGE

On many urban and industrial properties, past or present site activities have left contamination that could affect human health and the environment. The nature, extent and the risk posed by these contaminants are generally not apparent unless site assessments are carried out to determine what problems there might be. Contaminated soils and groundwater can pose a concern to existing or future users of the property, its neighbors and the environment.

A new guideline is needed to address the limitations of the current 1989 cleanup guideline,

such as the lack of cleanup criteria and limited flexibility in dealing with contaminants at depth. A new approach is needed to encourage redevelopment and reuse of contaminated lands in an environmentally and economically sustainable manner.

PROPOSED GUIDELINE

The proposed guideline will continue to describe a preferred practice for assessing and cleaning up contaminated sites. The new guideline essentially provides guidance to property owners/consultants on how to:

- assess a site for possible contamination;
- collect and analyse samples if contamination is suspected or found;
- clean up the property for re-use or development.

In most cases, the application of this guideline will be at the discretion of the property owner. There is no MOEE legislative or regulatory requirement to follow the new cleanup guideline unless the site is causing or is likely to cause an adverse effect (as defined in the Environmental Protection Act (EPA)). In this case, a cleanup may be ordered by MOEE under existing legislation.

The guideline and accompanying documents have been designed to assist property owners and their consultants in the assessment and cleanup of contaminated sites. The resulting reports are expected to become widely used by individuals and institutions such as lenders, insurers, and local governments when considering sites for development and re-use.

Under the guideline, a clean property is defined by soil, sediment, and groundwater cleanup criteria

developed for specific land and groundwater uses. If a property meets the cleanup criteria for a specific land and groundwater use, then that property is considered to be clean for the proposed use.

The guideline incorporates three different approaches for remediating a contaminated site. It is proposed that the property owner, not MOEE, have the option of selecting one of these cleanup approaches:

- Background
- Generic
- Site Specific Risk Assessment (SSRA)

Background approach:

The background approach remediates the site to rural or urban background levels for the contaminants of concern. A set of background soil criteria has been provided in the guideline that has been determined from an Ontario-wide sampling program in rural and urban parks not affected by local point sources of pollution (refer to section 7.3 of the guideline). Guidance is also provided on how to develop new background criteria when no MOEE background criteria exist.

Generic approach:

A new list of cleanup criteria (117 contaminants vs. 22 currently available) for both soil and groundwater is proposed for generic use at most contaminated sites. Separate criteria have been made available for surface (1.5m depth) and sub-surface (greater than 1.5m) soils.

These generic cleanup criteria are effects-based and have been set to protect human health and the natural environment at almost all sites. Some sites, because of their sensitivity or other conditions, may require the use of more stringent cleanup requirements. These sites are referred to as sensitive sites in the guideline and are discussed below.

Under the generic approach, there are two cleanup options available called Full Depth and Stratified Depth Cleanup.

A Full Depth cleanup involves remediating all contaminated soil on the property to meet the surface soil cleanup criteria.

A Stratified Depth cleanup applies surface soil criteria to a depth of 1.5m allowing soils below 1.5m to be remediated to separate sub-surface criteria. The Stratified Depth approach recognizes that sub-surface criteria do not in some cases need to be as stringent as surface criteria.

The selection of Full or Stratified Depth Cleanup criteria is also made on the basis of three land-use and two groundwater protection categories:

<u>Land-Use</u>	<u>Groundwater Protection</u>
* Agricultural	* Non-Potable (protects against vapour migration, contamination of surface waters)
* Residential/ Parkland	* Potable (above but added protection for drinking water use)
* Industrial/ Commercial	

The Non-Potable groundwater protection feature can only be provided when present or future drinking water supplies will not be adversely affected (refer to section 2.3.3 of the guideline).

Once the property owner/consultant determines the land and groundwater use for the site in accordance with the guideline, the selection of appropriate generic cleanup criteria is straightforward (refer to section 2.3 and figure 2.2 of the guideline).

The generic cleanup criteria for lead (Pb) in this guideline are based on the multi-media lead standards recently developed by MOEE that are currently under public review by ACES. Any comments received on the current public consultation on lead standards could affect the final cleanup criteria used in this guideline.

Site Specific Risk Assessment approach:

The new guideline proposes the allowance of both Site Specific Risk Assessment (SSRA) and Risk Management as alternatives to the use of MOEE generic or background cleanup criteria.

Risk Assessment is a scientific technique which estimates the risk posed to humans or the natural environment by the exposure to a contaminant at a known concentration. The principles of risk assessment were used extensively to develop the generic soil and groundwater cleanup criteria in the proposed guideline. In developing generic criteria, the likely contaminant exposures to humans/environment are conservatively estimated to enable the criteria to be used for most sites. For example, while a contaminated site with clay soils would not need the same level of groundwater protection as a sandy soil site, to be protective for all sites, sandy soils were assumed in developing the generic criteria.

The development of site specific criteria using risk assessment is called Site Specific Risk Assessment (SSRA). Actual site information, such as soil type, is substituted for the assumptions used in the generic criteria. As a result, site specific cleanup criteria are usually numerically higher (less stringent) than the generic criteria, but should still protect human health and the environment.

The use of SSRA may provide cost savings for some site cleanups. The disadvantage of carrying out SSRA is that it can be an expensive undertaking relative to the value of the property or to the cleanup costs using generic criteria. SSRA can also be time consuming to research, develop, and review. Large contaminated sites are usually the most likely candidates for undertaking SSRA.

Risk Management techniques can also be incorporated after a SSRA is undertaken. Risk Management techniques are usually engineering solutions that manage or control contaminants (cap, isolate, ventilate/monitor), rather than undertaking steps to reduce or remove contaminants (treatment, destruction, or disposal).

The use of Risk Management (engineering solutions) raises two major issues, namely the monitoring and maintenance of the engineering solutions, and identifying responsibility/funding for these solutions in perpetuity.

In using SSRA and Risk Management to develop site specific approaches instead of remediating to generic or background criteria, a number of conditions for their use are proposed in the guideline, such as having the risk assessment peer-reviewed and carrying out a broad-based community consultation program (refer to section 7.4 of the guideline).

SENSITIVE SITES

There may be situations where physical and chemical site characteristics are very different from the conditions and assumptions considered in developing the generic criteria. There may also be unique, highly sensitive receptors such as an endangered species, at or in the vicinity of a site, which have not been considered in the development of the generic criteria. When such sensitive site conditions exist, the generic criteria may be inappropriate for use.

In this case, the guideline proposes that additional investigation and consultation be carried out to determine if more stringent cleanup is required (refer to section 6.0 of the guideline).

REVISED CLEANUP PROCESS

A four-step process is outlined in the guideline:

1. **Site Assessment** – involves the systematic gathering of information to identify actual or potential contamination related to the current or historical use of the property.
2. **Sampling and Analysis** – is intended to confirm and delineate the presence or absence of contamination found or suspected from the Site Assessment in Step 1.
3. **Site Cleanup** – involves the development and implementation of a plan to clean up or remediate the contamination found on the property.
4. **Completion of the Cleanup** – involves formal submission to MOEE of a Notice of Cleanup form.

The guideline provides a number of cleanup options available to property owners. Some of these options result in a need for information to be passed on to future owners and occupants to avoid future problems.

When a Stratified Depth cleanup is undertaken, the soils at depth should remain at depth. A site cleanup to Non-Potable soil and groundwater criteria results in groundwater quality that may not be suitable for human consumption. A cleanup based on SSRA may also have similar site use limitations. The knowledge of these site conditions should be passed onto future owners and occupants.

A notification mechanism is proposed for all cleanups where the site does not meet background or Full Depth/Potable groundwater protection criteria. A Director's Order (issued under Section 18 of the EPA) is proposed to direct property owners to register a Certificate of Prohibition on the title of the property (issued under Section 197 of the EPA). The Certificate of Prohibition and Director's Order provide a formal notification mechanism to persons acquiring a future interest in the property.

MOEE does not have the legislative authority to register all cleanup types on the title of the property without legislative changes to the EPA. Under the proposed guideline, the MOEE District Office would maintain a hard copy file of all Notices of Cleanup for the District.

RESPONSIBILITY AND COMPLIANCE

For any contaminated site that is causing or is likely to cause adverse environmental effects, the MOEE will continue to take an active regulatory role in overseeing all aspects of the cleanup to ensure appropriate corrective action is taken.

It is proposed in the guideline that voluntary cleanups, where MOEE has no regulatory involvement, be implemented without a formal MOEE review of the cleanup plan. MOEE guidance would still be provided to a property owner/consultant on request for guidance on specific issues.

In both cases, the responsibility and liability for current and future cleanup remains with the property owner (present or past) and/or consultant.

Currently, there are no standard qualifications for environmental consultants in Ontario. In the absence of standard qualifications and accreditation for environmental consultants, it is proposed that final reports on the completion of cleanup, as well as the Notice of Cleanup document in this guideline be certified by a Professional Engineer licensed to practise in Ontario. It is also proposed that other established professional associations which demonstrate comparable self-regulation to MOEE be given the same recognition. MOEE will acknowledge the completion of cleanup only when the Notice of Cleanup is certified by such a professional; although other professionals may be involved in cleanup activities.

To ensure that cleanups are conducted in accordance with the guideline, as certified in the Notice of Cleanup, MOEE will be conducting spot audits, including sampling and analyses, to verify the cleanups performed.

ECONOMIC ASSESSMENT OF PROPOSED GUIDELINE

An initial assessment of the economic implications of the proposed guideline has been prepared. A comparison of current costs and projected costs under the proposed guideline was made. This comparison focused on the use of the proposed generic cleanup criteria. The following observations were made:

- the proposed generic cleanup criteria will not unilaterally increase or decrease costs but will have a range of effects depending on the contaminant and cleanup options chosen.

- the combined use of the stratified depth cleanup and non-potable groundwater protection is likely to decrease the costs of cleanup in many urban areas where groundwater is not used or is not likely to be used for drinking water.

In addition it is expected that:

- the availability of more generic cleanup criteria will provide more certainty to property owners and lenders to estimate current/potential liabilities.
- the use of SSRA and risk management in lieu of generic cleanup criteria may provide some economic savings for the remediation of large contaminated properties.

COMPANION DOCUMENTS

Three companion documents have been prepared to accompany the cleanup guideline.

Guidance on Sampling and Analytical Methods For Site Clean-ups in Ontario outlines the suggested methods for the sampling and analyses of air, soil, water, and sediments carried out in Step 2. Testing requirements for all 117 soil contaminants listed in the proposed guideline are not mandatory at each site. Property owners and their consultants should sample and analyse for those contaminants that are known or suspected to be present from the investigations carried out in Step 1 and 2.

Guidance For the use of Risk Assessment in Site Clean-ups in Ontario provides general guidance on how to carry out human health and ecological site specific risk assessments to develop site specific cleanup criteria.

A rationale document, which describes the basis for the development of the generic criteria, is also available for public review. This document is entitled *Rationale For the Development and Application of Generic Soil, Groundwater, and Sediment Criteria For Clean-up of Contaminated Sites: Part 1 - Discussion*.

NOTE: The *Proposed Policy For the Management of Excess Soil, Rock and Like Materials* is currently under review by MOEE. Public consultation on this proposed policy was previously undertaken by ACES and a final report was submitted to the Minister of Environment and Energy. As part of MOEE's current review, linkages between this policy and the proposed new cleanup guideline will be aligned.

FOR FURTHER INFORMATION

To obtain *Guideline For the Clean-up of Contaminated Sites in Ontario* or companion and background documents related to this proposed guideline, please contact:

Advisory Committee on Environmental Standards

40 St. Clair Avenue W., 4th Floor

Toronto, Ontario

M4V 1M2

Tel:(416) 314-9265

Companion Documents:

- (1) *Guidance on Sampling and Analytical Methods For Site Clean-ups in Ontario*
- (2) *Rationale For the Development and Application of Generic Soil, Groundwater, and Sediment Criteria For Clean-up of Contaminated Sites : Part 1 - Discussion*
- (3) *Guidance For the Use of Risk Assessment in Site Clean-ups in Ontario*

Other Background Documents include:

- (1) *Economic Assessment of Case Studies Based on Proposed Ministry Clean Up Guidelines - June 1994*
- (2) *Rationale For the Development and Application of Generic Soil, Groundwater, and Sediment Criteria For Clean-up of Contaminated Sites : Part 2 - Appendices*

Appendix 2: List of Respondents

Y. Ali	Coordinator, Riverdale 2000 Project, Citizens For A Safe Environment
R. Anderson / S. Ward	Environmental Historian, Wakefield Environmental, Toronto, Ont.
J. Arey	
J.D. Armistead	
D.A. Bayley	A.C.P.O. Chairman, Licensure Committee, Ontario
A. Beaumont	Assistant Deputy Minister, Housing Planning & Policy Division, Ministry of Housing, Toronto, Ontario
P.J. Beck	Senior Hydrogeologist and Principal, Raven Beck, Markham, Ontario
N. A. Bell	Henderson, Paddon Environmental Inc., Owen Sound, Ontario
R. Bertell	President, International Institute of Concern for Public Health
B. Biederman	
A. Bos	Vice-President, HSP Inc. Arva, Ontario
A.B. Bowman	Environmental Scientist/Principal, N.A.R. Environmental Consultants Inc., Sudbury, Ontario
U. Brand	President, TerraChem Environmental Consultants, Inc. Thorold, Ontario
D.D. Brown	
W.F.M. Brown	President Walter Brown Associates, Mississauga, Ontario
J.R. Bruce	
R.C. Burdett	President, Ontario Society For Environmental Management, Woodbridge, Ontario
B. Butler	
L. Calder	Specialist, Assessment & Remediation, Products Safety & Environment, Shell Canada Products Limited, Calgary, Alberta
E.R. Caldwell	Manager, Public Policy and Regulatory Affairs, Imperial Oil Products and Chemicals Division, Toronto, Ontario
B. Cambre	Canadian General-Tower Limited, Cambridge, Ontario
R.A. Cameron	

H.J. Canning	President, Fiba Canning Inc., Scarborough, Ontario
D. Cansfield	President, Ontario Public School Boards' Association, Toronto, Ontario
B. Caplan	City Clerk, City Clerks Office, City of Toronto
D. Carter	Deputy Commissioner, Waterfront Regeneration Trust, Toronto, Ontario
D.B. Chambers	Principal, SENES Consultants Limited, Richmond Hill, Ont.
D.L. Charlesworth	President, Charlesworth & Associates, Toronto, Ontario
F. Chin	Toronto, Ontario
D. Choi	Scarborough, Ontario
K.E. Clark / R.C.E. McKee	O'Connor Associates Environmental Inc., Oakville, Ontario
K. Clarke-Whistler	General Manager, Beak Consultants Limited, Brampton, Ontario
C. Cobden	Program Manager, Ontario Forest Industries Association, Toronto, Ontario
J.L. Cohen	Director, Environmental Directorate, Toronto Transit Commission, Toronto, Ontario
F.C. Colozza	
J. Connelly	
K. Cooper	Canadian Environmental Law Association & Canadian Institute for Environmental
P. Muldoon,	Law, Toronto, Ontario
M. Winfield	
R. Coronado	
M. Lawrence	Citizens Environment Alliance, Windsor, Ontario
M. Keith	
C. Costa	Harbour Remediation & Transfer Inc., Toronto, Ontario
H. J. Cross	
J.E. Cummins	Associated Professor, Genetics, Dept. of Plant Sciences, University of Western Ontario, London, Ontario
R. Daciw	Environmental Geologist, Waterra Pumps Limited, Toronto, Ontario
R.W. Dalrymple	Associate Professor of Geological Sciences & Coordinator of Environmental Sciences, Queen's University, Kingston, Ontario
S.E. Daniel	Environmental Scientist, Kilborn Inc., Toronto, Ontario
G.F. Davies	

J. Denner*	Department of the Environment, Contaminated Land and Liabilities Division, London, England
B.E. Denney	Director, Water Resource Division, The Metropolitan Toronto and Region Conservation Authority, Downsview, Ontario
B. Denning	Chairperson, Lakeshore Planning Council, Etobicoke, Ontario
P.J. Dewaele	
D. Dileo	Registrar, Professionals Engineers Ontario, Toronto, Ontario
T.D. Dougherty	
R. Dresher	President, Dresher Appraisal Services Ltd. Etobicoke, Ontario
B. Dressler	
J. Drew	
D. DuBois	Associate, Environmental Division, Golder Associates Ltd. Mississauga, Ontario
G. Duncan	President, A&A Environmental Services Inc., Kirkland Lake, Ontario
B.J. Dupuis	Executive Director, Canadian Association of Metal Finishers, Thornhill, Ontario
J. Easton	
S. Eaton	Project Scientist, Wastewater Technology Section, Gore & Storrie, North York, Ontario
G. Edmunds	Envirisk, Edmonton, Alberta
F. & S. Eggert	
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